DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016
FIRST SEM

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Sem	Scheme Of Examinations			
		Theory	Practical		Duration (In Hrs.)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM-101	English-I	3	-	45	3	20	80	100
CM-102	Engineering Mathematics - I	5	-	75	3	20	80	100
CM-103	Engineering Physics - I	4	-	60	3	20	80	100
CM-104	Engineering Chemistry and Environmental studies - I	4	-	60	3	20	80	100
CM-105	Computer Fundamentals	4	-	60	3	20	80	100
CM-106	Fundamentals of C Programming	4	-	60	3	20	80	100
PRACTICAL SUBJECTS								
CM-107	Engineering Drawing - I	-	6	90	3	40	60	100
CM-108	Fundamentals of C Programming Lab	-	6	90	3	40	60	100
CM-109	Physics Lab - I	-	3	45	3	20	30	50
CM-110	Chemistry Lab - I	-			3	20	30	50
CM-111	Computer Fundamentals Lab	-	3	45	3	40	60	100
	Total	**24**	**18**	**630**	**-**	**280**	**720**	**1000**

CM-101,102,103,104,107,109 Common with All Branches

CM-105, 106,108, 110 Common with Information Technology (IT)

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016
SECOND SEM

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Sem	Scheme Of Examinations			
		Theory	Practical		Duration (In Hrs.)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM-201	English-II	3	-	45	3	20	80	100
CM-202	Engineering Mathematics - II	5	-	75	3	20	80	100
CM-203	Engineering Physics - II	4	-	60	3	20	80	100
CM-204	Engineering Chemistry and Environmental studies - II	4	-	60	3	20	80	100
CM-205	Office Automation	4	-	60	3	20	80	100
CM-206	Advanced C Programming	4	-	60	3	20	80	100
PRACTICAL SUBJECTS								
CM-207	Engineering Drawing-II	-	6	90	3	40	60	100
CM-208	Advanced C Programming Lab	-	6	90	3	40	60	100
CM-209	Physics Lab -II	-	3	45	3	20	30	50
CM-210	Chemistry Lab -II	-			3	20	30	50
CM-211	Office Automation Lab	-	3	45	3	40	60	100
	Total	**24**	**18**	**630**	**-**	**280**	**720**	**1000**

CM-201,202,203,204,207,209 Common with All Branches

CM-205, 206,208, 210 Common with Information Technology (IT)

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016

III Semester

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practical		Duration (No. of Periods)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM-301	Engineering Mathematics–III	4	-	60	3	20	80	100
CM-302	Basic Electrical & Electronics Engineering	5	-	60	3	20	80	100
CM-303	Digital Electronics	4	-	60	3	20	80	100
CM-304	Computer Organization	4	-	75	3	20	80	100
CM-305	RDBMS	5	-	75	3	20	80	100
CM-306	OOPS through C++	4	-	75	3	20	80	100
PRACTICAL SUBJECTS								
CM-307	Digital Electronics Lab	-	3	45	3	40	60	100
CM-308	RDBMS Lab	-	6	90	3	40	60	100
CM-309	OOPS through C++ Lab	-	3	45	3	40	60	100
CM-310	Communication & Life skills Lab		4	45	3	40	60	100
	Total	**26**	**16**	**630**		**280**	**720**	**1000**

CM-301, CM-310: Common with All Branches

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016
IV Semester

Sub Code	Name of the Subject	Instruction Periods/Week Theory	Practicals	Total Periods Per Semester	Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM-401	Engineering Mathematics- IV	4	-	60	3	20	80	100
CM-402	Operating systems	5	-	75	3	20	80	100
CM-403	Data Structures through C++	5	-	75	3	20	80	100
CM-404	Microprocessors	5	-	75	3	20	80	100
CM-405	.Net Programming	5	-	75	3	20	80	100
CM-406	Web designing	5	-	75	3	20	80	100
PRACTICAL SUBJECTS								
CM-407	Data Structures through C++ Lab	-	3	45	3	40	60	100
CM-408	Microprocessors Lab	-	3	45	3	40	60	100
CM-409	. Net Programming Lab	-	3	45	3	40	60	100
CM-410	Web designing Lab	-	4	60	3	40	60	100
	Total	**29**	**13**	**630**	**-**	**280**	**720**	**1000**

CM-401: Common with All Branches

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016
V Semester

Subject Code	Name of the Subject	Instruction period / week		Total Periods Per Semester	Scheme of Examination			
		Theory	Practical		Duration (hours)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM – 501	Industrial Management & Entrepreneurship	4	-	60	3	20	80	100
CM – 502	Java Programming	5	-	60	3	20	80	100
CM – 503	Computer Hardware & Networking	4	-	60	3	20	80	100
CM – 504	System Administration	5	-	60	3	20	80	100
CM – 505	Mobile Application Development	4	-	60	3	20	80	100
CM – 506	A.. Software Engineering B. Cryptography and Network Security C. Cloud Computing	5	-	60	3	20	80	100
PRACTICAL SUBJECTS								
CM- 507	Java Programming & Mobile Application development Lab	-	6	90	3	40	60	100
CM -508	Computer Hardware & Networking Lab	-	3	45	3	40	60	100
CM -509	System Administration Lab	-	3	45	3	40	60	100
CM -510	Project work	-	3	90	3	40	60	100
TOTAL		**27**	**15**	**630**		**280**	**720**	**1000**

CM-501: IME is common with DECE, DIT

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2016

VI Semester

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practical		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
CM-601	Industrial Training	6 Months						

Common with Information Technology (IT)

I SEM

English for Polytechnics
(Common to All the Branches)
First Semester

Subject Code   : CM- 101
No. of periods per week   : 3
No. of periods per year   : 45

Objectives and Key Competencies

Sl. No.	Name of the Unit	Objectives	Key Competencies
01	Need for English	• Understand the need to learn English • Find solutions to some problems of Learning English	• Know the need to learn English • Identify the problems students face in learning |English • Discuss the various solutions to overcome them
02	Classroom English	• Identify expressions useful in the classroom • Use classroom expressions meaningfully	• How to greet the teacher and other students • Learn the expressions frequently used by the teacher • Practise to express one's ideas in English
03	Expressing Feelings	• Express feelings • Speak about what others feel	• Know the structures to express feelings • Use the vocabulary related to feelings
04	Expressing Likes and Dislikes	• Express likes and dislikes • Express likes and dislikes of others	• Study the different ways to express likes and dislikes • Learn several words and phrases to express likes and dislikes
05	Making requests	• Learn some ways of making requests • Learn some ways of	• Examine the various structures to make requests • Learn to make requests in formal

		offering help	and informal situations
06	**The Mighty Mountain and Little Lads of Telangana**	• Comprehend the central idea • Learn about Expeditions	• Understand the main idea • Practise to read aloud • Learn new vocabulary
07	**Adventures of Toto**	• Read and comprehend the main idea • Appreciate a humorous narrative	• Understand the central idea • Learn to make inferences • Learn new vocabulary • Complete a story
08	**Tiller Turns Engineer – An Innovation**	• Read and understand the main idea • Improve your vocabulary	• Focus on minute details • Develop innovative skills • Present one's view
09	**The Present Tense- I**	• Differentiate between time and tense • Describe habits and facts	• Learn the three broad categories of tense • Learn the action words and auxiliary words • Learn the simple present tense structure • Talk about routine, habits and facts • Make negative sentences
10	**The Present Tense- II**	• Describe the actions happening in the present • Describe past actions as relevant to the present	• Express the actions happening in the present • Express the actions that have been completed in the recent past • Make sentences in the present perfect continuous tense
11	**The Past Tense- I**	• Understand what irregular verbs are • Describe actions which took	• Learn the irregular verbs • Narrate the stories or incidents in

		place in the past	simple past tense
12	**The Past Tense- II**	• Describe an action that was happening in the past • Describe a past action that took place before another past action	• Describe the actions in progress in the past • Use past perfect tense
13	**The Future Tense**	• Describe future actions • Understand various aspects of future tense	• Express the actions that are going to happen in the future • Know the uses of the modals
14	**Basic Sentence Structures- I**	• Understand basic sentence structures • Use basic sentence structures in spoken and in written forms • Identify common errors in the usage of basic sentence structures	• Learn how English is different from Indian Languages from structures point of view • Learn intransitive verbs • Use Subject +Verb structure • Use Subject + Verb + Subject Complement structure
15	**Basic Sentence Structures- II**	• Understand basic sentence structures • Form basic sentence structures	• Learn transitive verbs which are followed by only one object • Learn transitive verbs which are followed by two objects • Identify the structures • Use Object complement structure
16	**Voice – I**	• Identify and use the passive voice • Know when the passive voice is used • Use the passive voice	• Learn when to use the active voice and passive voice • Observe the language used in sign boards and newspaper headlines • Change the voice
17	**Voice – II**	• Identify the two objects of a verb • Omit the object in a passive	• Change the voice when two objects are given

voice sentence

18	**Asking Yes/No Questions**	• Understand the word order in questions • Ask yes/no questions	• Communicate using yes/no questions • Invert the position of helping verb to make questions • Know the common errors in framing questions
19	**Asking Wh- Questions**	• Frame wh- questions • Seek information using such questions	• Learn wh- words • Ask for specific information using wh- questions
20	**Paragraph Writing – I**	• Generate ideas for writing a paragraph • Organize ideas before writing • Write a short paragraph	• Write a paragraph using hints • Organize the ideas • Write the rough draft • Edit the paragraph to make final copy
21	**Paragraph Writing – II**	• Identify a topic sentence • Write a cohesive paragraph • Write supporting sentences	• Write a short paragraph using the first sentence • Learn a few ways of beginning paragraph • Write a few supporting sentences • Write a short paragraph
22	**Letter Writing – I**	• Understand the format of a personal letter • Write a personal letter	• Learn the main components (the format) of a personal letter • Practise a few ways of greetings, openings and closures • Write a personal letter
23	**Letter Writing - II**	• Understand the format of an official letter • Write an official letter	• Know the format of official letters • Learn the expressions often used in official letters • Write an official letter using the

hints

Weightage Table

Sl. No	Module	Short Questions	Essay questions
1	Speaking	8	1
2	Grammar	12	1 (questioning)
3	Reading	---	2
4	Writing	---	4 (2 from paragraph writing and 2 from letter writing)

ENGINEERING MATHEMATICS - I

(Common to all branches)

Subject title   : **Engineering Mathematics-I**
Subject code   : **CM-102**
Periods per week   : **5**
Total Periods per Semester : **75**

Time Schedule with BLUEPRINT

S. No	Major Topic	No of Periods		Weightage of Marks	Short Type			Essay Type		
	Unit - I Algebra	Theory	Practice		R	U	App	R	U	App
1	Logarithms	2	1	2	0	1	0	0	0	0
2	Partial Fractions	5	1	9	1	1	0	½	0	0
3	Matrices and Determinants	18	6	25	2	3	0	0	½	1
	Unit - II Trigonometry									
4	Compound Angles	4	2	14	1	1	0	1	0	0
5	Multiple and Submultiple angles	6	3	16	1	2	0	0	1	0
6	Transformations	6	3	17	1	0	0	0	½	1
7	Inverse Trigonometric Functions	6	2	17	1	0	0	½	1	0
8	Properties of triangles	2	0	4	2	0	0	0	0	0
9	Hyperbolic Functions	2	0	2	1	0	0	0	0	0
10	Complex Numbers	4	2	14	1	1	0	1	0	0
	Total	55	20	120	11	9	0	3	3	2
	Marks				22	18	0	30	30	20

R: **Remembering type** : 52 marks
U: **Understanding type** : 48 marks
App: **Application type**   : 20 marks

Objectives

Upon completion of the course the student shall be able to:

UNIT – I

Algebra

1.0   Use Logarithms in engineering calculations

   1.1   Define logarithm and list its properties.

   1.2   Distinguish natural logarithms and common logarithms.

   1.3   Explain the meaning of e and exponential function.

   1.4   State logarithm as a function and its graphical representation.

   1.5   Use the logarithms in engineering calculations.

2.0   Resolve Rational Fraction into sum of Partial Fractions in engineering problems

   2.1   Define the following fractions of polynomials:

      1.   Rational,

      2.   Proper

      3.   Improper

   2.2   Explain the procedure of resolving rational fractions of the type mentioned below into partial fractions

   i) $\dfrac{f(x)}{(x+a)(x+b)(x+c)}$ ii) $\dfrac{f(x)}{(x+a)^2(x+b)(x+c)}$

   iii) $\dfrac{f(x)}{(x^2+a)(x+b)}$ iv) $\dfrac{f(x)}{(x+a)(x^2+b)^2}$

3.0   Use Matrices for solving engineering problems

   3.1   Define a matrix and order of a matrix.

   3.2   State various types of matrices with examples (emphasis on 3rd order square matrices).

3.3   Compute sum, scalar multiplication and product of matrices.

3.4   Illustrate the properties of these operations such as associative, distributive, commutative properties with examples and counter examples.

3.5   Define the transpose of a matrix and write its properties.

3.6   Define symmetric and skew-symmetric matrices.

3.7   Resolve a square matrix into a sum of symmetric and skew- symmetric matrices with examples in all cases.

3.8   Define minor, co-factor of an element of a 3x3 square matrix with examples.

3.9   Expand the determinant of a 3 x 3 matrix using Laplace expansion formula.

3.10   Distinguish singular and non-singular matrices.

3.11   Apply the properties of determinants to solve problems.

3.12   Solve system of 3 linear equations in 3 unknowns using Cramer's rule.

3.13   Define multiplicative inverse of a matrix and list properties of adjoint and inverse.

3.14   Compute adjoint and multiplicative inverse of a square matrix.

3.15   Solve system of 3 linear equations in 3 unknowns by matrix inversion method

3.16   State elementary row operations.

3.17   Solve a system of 3 linear equations in 3 unknowns by Gauss- Jordan method

UNIT – II

Trigonometry:

4.0   Solve simple problems on Compound Angles

4.1   Define compound angles and state the formulae of Sin (A±B), Cos (A±B), tan (A±B) and Cot (A±B)

4.2   Give simple examples on compound angles to derive the values of $Sin15^0$, $Cos15^0$, $Sin75^0$, $Cos75^0$, $tan 15^0$, $tan75^0$ etc.

4.3   Derive identities like Sin (A+B) .Sn (A–B) = $Sin^2 A – Sin^2 B$ etc.

4.4   Solve simple problems on compound angles.

5.0   Solve problems using the formulae for Multiple and Sub- multiple Angles

5.1   Derive the formulae of multiple angles 2A, 3A etc. and sub multiple angles A/2 in terms of angle A of trigonometric functions.

5.2   Derive useful allied formulas like $\sin^2 A = (1 - \cos 2A)/2$ etc.

5.3   Solve simple problems using the above formulae

6.0   Apply Transformations for solving the problems in Trigonometry

6.1   Derive the formulae on transforming sum or difference of two trigonometric ratios in to

a product and vice versa - examples on these formulae.

6.2   Solve problems by applying these formulae to sum or difference or product of

three or more terms.

7.0   Use Inverse Trigonometric Functions for solving engineering problems

7.1   Explain the concept of the inverse of a trigonometric function by selecting an

appropriate domain and range.

7.2   Define inverses of six trigonometric functions along with their domains and

ranges.

7.3   Derive relations between inverse trigonometric functions so that given $A = \sin^{-1} x$, express angle A in terms of other inverse trigonometric functions - with examples.

7.4   State various properties of inverse trigonometric functions and identities like

$\sin^{-1} x + \cos^{-1} x = \dfrac{\pi}{2}$ etc.

7.5   Derive formulae like $\tan^{-1} x + \tan^{-1} y = \tan^{-1}\left(\dfrac{x+y}{1-xy}\right), \;\; where \; x \geq 0, y \geq 0, xy < 1$ etc., and

solve simple problems.

8.0   Appreciate Properties of triangles

8.1   State sine rule, cosine rule, tangent rule and projection rule.

9.0   Represent the Hyperbolic Functions in terms of logarithm functions

9.1   Define Sinh x, cosh x and tanh x and list the hyperbolic identities.

9.2   Represent inverse hyperbolic functions in terms of logarithms.

10.0   Represent Complex numbers in various forms

10.1   Define complex number, its modulus and conjugate and list their properties.

10.2   Define the operations on complex numbers with examples.

10.3   Define amplitude of a complex number

10.4 Represent the complex number in various forms like modulus-amplitude (polar) form, Exponential (Euler) form – illustrate with examples.

COURSE CONTENT

Unit-I

Algebra

1. Logarithms:

   Definition of logarithm and its properties, natural and common logarithms; the meaning of e   and exponential function, logarithm as a function and its graphical representation.

2. Partial Fractions:

   Rational, proper and improper fractions of polynomials. Resolving rational fractions in to their   partial fractions covering the types mentioned below:

   $$i) \quad \frac{f(x)}{(x+a)(x+b)(x+c)} \qquad ii) \quad \frac{f(x)}{(x+a)^2(x+b)(x+c)}$$

   $$iii) \quad \frac{f(x)}{(x^2+a)(x+b)} \qquad iv) \quad \frac{f(x)}{(x+a)(x^2+b)^2}$$

Matrices:

3. Definition of matrix, types of matrices-examples, algebra of matrices-equality of two matrices, sum, scalar multiplication and product of matrices. Transpose of a matrix, Symmetric, skew-symmetric matrices-Minor, cofactor of an element-Determinant of a square matrix-Laplace's expansion, properties of determinants. Singular and non-singular matrices-Adjoint and multiplicative inverse of a square matrix- examples-System of linear equations in 3 variables-Solutions by Cramer's rule, Matrix inversion method-examples-Elementary row operations on matrices -Gauss-Jordan method to solve a system of equations.

Unit-II

Trigonometry:

4. Compound angles: Formulas of sin (A±B), cos (A±B), tan (A±B), cot (A±B) and related identities with problems.

5. Multiple and sub-multiple angles: trigonometric ratios of multiple angles 2A, 3A and submultiple angle A/2 with problems.

6. Transformations of products into sums or differences and vice versa simple problems

7. Inverse trigonometric functions: definition, domains and ranges-basic properties-problems.

8. Properties of triangles: relation between sides and angles of a triangle- sine rule, cosine rule, tangent rule and projection rule – statements only.

9. Hyperbolic functions: Definitions of hyperbolic functions, identities of hyperbolic functions, inverse hyperbolic functions and expression of inverse hyperbolic functions in terms of logarithms.

10. Complex Numbers: Definition of a complex number, Modulus and conjugate of a complex number, Arithmetic operations on complex numbers, Modulus- Amplitude (polar) form, Exponential (Euler) form of a complex number- Problems.

Reference Books:

1. A text book of matrices by Shanti Narayan,
2. Plane Trigonometry, by S.L Loney

ENGINEERING PHYSICS-I

Subject Title : **Engineering Physics - I**
Subject Code : **CM -103**
Periods per week : **04**
Total periods per semester : **60**

TIME SCHEDULE

S.No	Major Topics	No. of Periods	Weightage of Marks	Short Answer Type (2 marks)	Essay Type (10 marks)
1.	Units and Dimensions	08	08	4	-
2.	Modern Physics	12	28	4	2
3.	Heat and Thermodynamics	12	28	4	2
4.	Elements of Vectors	14	28	4	2
5.	Kinematics	14	28	4	2
	Total:	**60**	**120**	**20**	**8**

INTERNAL ASSESSMENT

UNIT TEST 1 : UNITS 1,2 and 3

UNIT TEST 2 : UNITS 4 and 5

OBJECTIVES
  Upon completion of the course the student shall be able to

1.0 Understand the concept of Units and dimensions
   1.1   Explain the concept of Units
   1.2   Define the terms
          a) Physical quantity, b) Fundamental physical quantities and
          c) Derived physical quantities
   1.3   Define unit
   1.4   Define fundamental units and derived units
   1.5   State SI units with symbols
   1.6   State Multiples and submultiples in SI system
   1.7   State Rules of writing S.I. units
   1.8   State advantages of SI units
   1.9   Define Dimensions
   1.10   Write Dimensional formulae
   1.11   Derive dimensional formulae of physical quantities
   1.12   List dimensional constants and dimensionless quantities
   1.13   State the principle of Homogeneity of Dimensions
   1.14   State the applications of Dimensional analysis (without problems)
   1.15   State the limitations of dimensional analysis

2.0 Understand the concept of Modern physics
   2.1   Explain Photo-electric effect
   2.2   Write Einstein's photoelectric equation

2.3   State the laws of photoelectric effect
2.4   Explain the Working of a photoelectric cell
2.5   List the Applications of photoelectric effect
2.6   Recapitulate refraction of light and its laws
2.7   Define critical angle
2.8   Explain the Total Internal Reflection
2.9   Explain the basic principle of optical Fiber
2.10   Mention types of optical fibbers
2.11   List the applications of optical Fiber
2.12   Define super conductor and superconductivity
2.13   List the examples of superconducting materials
2.14   List the applications of superconductors

3.0   Understand the concept of Heat and thermodynamics
3.1   Explain the concept of expansion of gases
3.2   Explain Boyle's law
3.3   State Charle's laws in terms of absolute temperature
3.4   Define absolute zero temperature
3.5   Explain absolute scale of temperature
3.6   Define ideal gas
3.7   Derive the ideal gas equation.
3.8   Define gas constant and Universal gas constant
3.9   Explain why universal gas constant is same for all gases
3.10   State SI unit of universal gas constant
3.11   Calculate the value of universal gas constant
3.12   State the gas equation in terms of density
3.13   Distinguish between r and R
3.14   Define Isothermal process
3.15   Define adiabatic process
3.16   Distinguish between isothermal and adiabatic process
3.17   State first and second laws of thermodynamics
3.18   Define specific heats & molar specific heats of a gas
3.19   Derive the relation $C_p - C_v = R$
3.20   Solve the related numerical problems

4.0   Understand the concept of Elements of Vectors
4.1   Explain the concept of Vectors
4.2   Define Scalar and Vector quantities
4.3   Give examples for scalar and vector quantities
4.4   Represent a vector graphically
4.5   Classify the Types of Vectors
4.6   Resolve the vectors
4.7   Determine the Resultant of a vector by component method
4.8   Represent a vector in space using unit vectors (i, j, k)
4.9   State triangle law of addition of vectors
4.10   State parallelogram law of addition of vectors
4.11   Illustrate parallelogram law of vectors in case of flying bird and sling.
4.12   Derive an expression for magnitude and direction of resultant of two vectors
4.13   State polygon law of addition of vectors
4.14   Explain subtraction of vectors
4.15   Define Dot product of two vectors with examples (Work done, Power)
4.16   Mention the properties of Dot product

4.17 Define Cross products of two vectors and state formulae for torque and linear velocity

4.18 Mention the properties of Cross product.

4.19 Solve the related numerical problems

5.0 Understand the concept of Kinematics

    5.1 Write the equations of motion in a straight line

    5.2 Explain the acceleration due to gravity

    5.3 Derive expressions for vertical motion
       a) Maximum Height, b) time of ascent, c) time of descent, and d) time of flight

    5.4 Derive an expression for height of a tower when a body projected vertically upwards from the top of a tower.

    5.5 Explain projectile motion with examples

    5.6 Explain Horizontal projection

    5.7 Derive an expression for the path of a projectile in horizontal projection

    5.8 Explain Oblique projection

    5.9 Derive an expression for the path of projectile in Oblique projection

    5.10 Derive formulae for projectile in Oblique projection
       a) Maximum Height, b) time of ascent, c) time of descent, d) time of flight
       e) Horizontal Range and f) Maximum range

    5.11 Solve the related numerical problems

COURSE CONTENT

1. Units and Dimensions:
Introduction – Physical quantity – Fundamental and Derived quantities – Fundamental and Derived units- SI units –Multiples and Sub multiples – Rules for writing S.I. units- Advantages of SI units – Dimensions and Dimensional formulae- Dimensional constants and Dimensionless quantities- Principle of Homogeneity- Applications and limitations of Dimensional analysis.

2. Modern Physics;
Photoelectric effect –Einstein's photoelectric equation-laws of photoelectric effect - photoelectric cell –Applications of photo electric effect- Total internal reflection- fiber optics- -principle of an optical fiber-types of optical fibers - Applications of optical fibers- concepts of superconductivity - applications

3. Heat and Thermodynamics:
Expansion of Gases- Boyle's law- Absolute scale of temperature- Charle's laws- Ideal gas equation- Universal gas constant- Differences between r and R- Isothermal and adiabatic processes- Laws of thermodynamics- Specific heats of a gas - Problems

4. Elements of Vectors:
Scalars and Vectors –Types of vectors(Proper Vector, Null Vector, Unit Vector, Equal , Negative Vector, Like Vectors, Co-Initial Vectors, Co-planar Vectors and Position Vector).Addition of vectors- Representation of vectors- Resolution of vectors - Parallelogram, Triangle and Polygon laws of vectors–Subtraction of vectors- Dot and Cross products of vectors-Problems

5. Kinematics:

Introduction- Concept of acceleration due to gravity- Equations of motion for a freely falling body and for a body thrown up vertically- Projectiles- Horizontal and Oblique projections- Expressions for maximum height, time of flight, range - problems

REFERENCE BOOKS

1. Intermediate physics Volume- I & 2   Telugu Academy
2. Text book of physics   Resnick & Holiday
3. Engineering physics   Gaur and Gupta
4. Fundamental Physics Volume -1 & 2   K.L.Gomber and K.L.Gogia

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES - I

Subject Title	:	Engineering Chemistry and Environmental Studies - I
Subject Code	:	CM-104
Periods per week	:	04
Total periods per semester	:	60

TIMESCHEDULE

S.No	Major Topics	No. of Periods	Weightage of Marks	Short Answer Type (2 marks)	Essay Type (10 marks)
1.	FUNDAMENTALS OF CHEMISTRY	18	40	5	3
2.	SOLUTIONS	10	18	4	1
3.	ACIDS & BASES	10	18	4	1
4.	WATER TECHNOLOGY	14	28	4	2
5.	ENVIRONMENTAL STUDIES – 1	08	16	3	1
	Total:	**60**	**120**	**20**	**8**

OBJECTIVES

Upon completion of the course the student shall be able to

A. ENGINEERINGCHEMISTRY

1.0 Fundamentals of Chemistry

1.1 Explain the fundamental particles of an atom like electron, proton and neutron etc.,

1.2 Explain the concept of atomic number and mass number

1.3 State the Postulates of Bohr's at omic theory and its limitations

1.4 Explain the concept of Quantum numbers with examples

1.5 Explain 1. Aufbau'sprinciple, 2. Hund'sruleand 3. Pauli'sexclusion principle with examples.

1.6 Define Orbital.

1.7 Draw the shapes of s,pandd Orbitals.

1.8 Distinguish between Orbitand Orbital

1.9 Write the electronic configuration of elements up to atomic number 30

1.10 Define chemical bond.

1.11 Explain the Postulates of Electronic theory of valancy

1.12 Define and explain three types of Chemical bonding viz., Ionic Covalent, Coordinate covalent bond with examples.

1.13 Explain bond formation in NaClandMgO

1.14 List the Properties of Ionic compounds

1.15 Explain covalent bond formation in Hydrogen molecule, Oxygen molecule, and Nitrogen molecule using Lewis dot method.

1.16 List the Properties of Covalent compounds

1.17 Distinguish between ionic compounds and covalent compounds.

1.18 Define the terms 1.Oxidation, 2.Reduction 3.Oxidation number 4. Valency, with examples.

1.19 Calculate the Oxidation Number

1.20 Differentiate between Oxidation Number and Valency.

2.0 Solutions

2.1 Define the terms 1.Solution, 2.Soluteand 3.Solvent

2.2 Classify solutions based on physical state.

2.3 Define solubility, unsaturated, saturated and super saturated solutions.

2.4 Define mole.

2.5 Explain Mole concept with examples.'

2.6 Define the terms 1. Atomic weight, 2.Molecular weight and 3. Equivalent weight

2.7 Calculate Molecular weight and Equivalent weight of Acids, Bases and Salts.

2.8 Define 1.Molarity and Normality.

2.9 Solve Numerical problems on Mole, Molarity and Normality

3.0 Acids and bases

3.1 Explain Arrhenius theory of Acids and Bases

3.2 State the limitations of Arrhenius theory of Acid sand Bases

3.3 Explain Bronsted–Lowry theory of acids and bases.

3.4 State the limitations of Bronsted–Lowry theory of acids and bases.

3.5 Explain Lewis theory of acids and bases

3.6 State the limitations Lewis theory of acids and bases

3.7 Explain the Ionic product of water

3.8 Define pH and explain Sorenson scale

3.9 Solve the Numerical problems on pH (Strong Acids and Bases)

3.10 Define buffer solution and give examples.

3.11 State the applications of buffer solutions.

4. 0 Water Technology

4.1 State the various Sources of water.

4.2   Define the terms soft water and hardwater with examples

4.3   Define hardness of water.

4.4   Explain temporary and permanent hardness of water.

4.5   List the usual chemical compounds causing hardness (with Formulae)

4.6   Define Degree of hardness, units of hardness in ppm(mg/L) and numerical problems related to hardness.

4.7   Disadvantages of using hardwater in industries.

4.8   Explain the methods of softening of hardwater:a) permut it process b).Ion-Exchange process.

4.9   Essential qualities of drinking water.

4.10   Explain municipal treatment of water for drinking purpose.

4.11   Define Osmosis and Reverse Osmosis(RO).

4.12   List the advantages of RO

5.0.   ENVIRONMENTALSTUDIES

5.1   Define the term environment

5.2   Explain the scope and importance of environmental studies

5.3   Explain the following terms 1).Lithosphere, 2).Hydrosphere, 3).Atmosphere,4).Biosphere, 5)Pollutant, 6).Contaminant 7) Pollution 8)receptor 9)sink 10) particulates, 11)Dissolved oxygen(DO), 12).Threshold limit value(TLV), 13).BOD, and 14).COD

5.4   Explain the growing energy needs

5.5   Explain renewable(non-conventional) and non renewable(conventional) energy sources with examples.

5.6   Define an Ecosystem. understand biotic and abiotic components of ecosystem.

5.7   Define the terms:

        1).Producers, 2).Consumers and 3).Decomposers with examples.

5.8   Explain biodiversity and threats to biodiversity

COURSE CONTENT

A.   ENGINEERINGCHEMISTRY

1.   Fundamentals of Chemistry

Atomic Structure: Introduction - Fundamental particles – Bohr's theory – Quantum numbers – Aufbau principle - Hand's rule - Pauli's exclusion Principle- Orbitals, shapes of s, p and d orbitals - Electronic configurations of elements

Chemical Bonding: Introduction – Valency, types of chemical bonds – Ionic, covalent and co-ordinate covalent bond with examples–Properties of Ionic and Covalent compounds

Oxidation-Reduction: Concepts of Oxidation- Reduction, Oxidation Number- calculations,

2.   Solutions

Introduction-concentration methods – Mole concept, Molarity, Normality, Equivalent weights, Numerical problems on Mole, Molarity and Normality

3. Acids and Bases

Introduction – theories of acids and bases and limitations – Arrhenius theory-Bronsted – Lowry theory – Lewis acid base theory – Ionic product of water– pH and related numerical problems–buffer solutions–Applications.

4. Water technology

Introduction–soft and hardwater–causes of hardness–types of hardness
–disadvantages of hard water – degree of hardness (ppm) – softening methods – permut it process – ion exchange process – numerical problems related to degree of hardness – drinking water – municipal treatment of water for drinking purpose – Osmosis, Reverse Osmosis - advantages of Reverse osmosis'.

5. ENVIRONMENTALSTUDIES

Introduction–environment–scopeandimportanceofenvironmentalstudies important terms–renewable and nonrenewable energy sources–Concept of ecosystem, producers, consumers and decomposers – Biodiversity, definition and threats to Biodiversity.

INTERNAL ASSESSMENT

UNIT TEST 1 : UNITS 1 and 2

UNIT TEST 2 : UNITS 3,4 and 5

REFERENCEBOOKS

1. Intermediate chemistry Vol 1&2   Telugu Acedemy

2. Engineering Chemistry   Jain & Jain

3. Engineering Chemistry   O.P. Agarwal, Hi-Tech.

4. Engineering Chemistry   Sharma

5. Engineering Chemistry   A.K. De

COMPUTER FUNDAMENTALS
(Common with Information Technology)

Subject	**: Computer Fundamentals**	
Subject Code	**: CM – 105**	
Periods per Week	**: 4**	
Periods per Year	**: 60**	

TIME SCHEDULE AND BLUE PRINT						
Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	Practice			
1	Fundamentals of Computers	15	0	28	4	2
2	Number Systems	12	3	28	4	2
3	DOS Operating system	10	0	28	4	2
4	Windows Operating System	10	0	18	4	1
5	Features of Internet	10	0	18	4	1
	Total	**57**	**3**	**120**	**20**	**8**

Objectives:

On completion of the study of the course the student shall be able to

1.0 Understand Fundamentals of Computer

1.1.   Define various terms related to computers – Computer, Hardware , Software, Firmware, High Level Language , Low Level Language

1.2.   Draw the block diagram of a Computer.

1.3.   Describe the interaction between the CPU, Memory, Input / Output devices

1.4.   Describe the function of CPU and major functional parts of CPU

1.5.   Describe the function of memory.

1.6.   Describe the function of input/output devices.

1.7.   State the relevance of speed and word length for CPU Performance.

1.8.   Recognize the current family of CPUs used in Computers.

1.9.   State the use of storage devices used in a Computer.

1.10. List types of memory used in a Computer.

1.11. State the importance of cache memory.

1.12. Explain the generations of computers.

1.13. Give the classification of computers - based on a) size, b) processor.

2.0 Understand Number systems

2.1. List the various number systems used in digital Computer.

2.2. State the importance of binary number system for use in Digital Computers

2.3. Convert decimal number into binary number.

2.4. Convert binary number into decimal number.

2.5. Convert binary number into hexadecimal number.

2.6. Convert hexadecimal number into binary number.

2.7. Explain the ASCII coding scheme.

2.8. Explain the EBCDIC coding scheme.

3.0 Understand DOS Operating System

3.1. Describe the need for an operating system.

3.2. List various operating systems used presently.

3.3. DOS Prompt.

3.4. Classify DOS commands

3.5. Internal Commands - CD, MD, DIR, RD, COPY, COPYCON, TYPE, DEL, PATH, DATE, TIME

3.6. External Commands - ATTRIB, TREE, FORMAT, CHKDSK, DISKCOPY, SCANDSK, XCOPY, PRINT, DELTREE

3.7. Explain directories and files

3.8. Know wild card characters

3.9. Describe Autoexec.bat and config.sys files

4.0 Understand Windows Operating Systems

4.1. List the features of Windows desktop.

4.2. List the components of a Window.

4.3. State the function of each component of a Window.

4.4. Explain the Method of starting a program using start button

4.5. Explain usage of maximize, minimize, restore down and close buttons.

4.6. State the meaning of a file.

4.7. State the meaning of a folder.

4.8. Explain the Method of viewing the contents of hard disk drive using Explorer

4.9. Explain the Method of finding a file using search option.

4.10. Describe installing new software using control panel

4.11. Describe uninstalling software using control panel

4.12. Explain installing a new hardware using control panel

4.13. Explain uninstalling a hardware using control panel

4.14. Narrate finding out drive space using system tool option of Accessories group

4.15. Explain the procedure of disk defragmentation using System tools

4.16. Narrate installing a printer using control panel

4.17. Explain the procedure for changing resolution, colour, appearance, screensaver options of the display

4.18. Narrate the process of changing the system date and time

5.0 Understand Features of Internet

5.1. Explain meaning of a computer network.

5.2. Describe the concept of a local area network.

5.3. Explain the concept of the wide area network

5.4. Compare Internet and Intranet

5.5. Describe the relevance of an internet service provider.

5.6. Explain the role of a modem in accessing the Internet.

5.7. Explain the installation procedure of a MODEM using control panel

5.8. Explain the purpose of web browser software.

5.9. Explain the structure of a Universal Resource Locator (URL).

5.10. Describe the purpose of World Wide Web, FTP, telnet and E-mail

5.11. Explain the process of sending and receiving E-mail

5.12. Describe address format and IP address

5.13. Describe DNS

5.14. Explain the role of search engines with examples.

5.15. Describe DHCP

5.16. Describe Social Network sites.

5.17. Describe Internet Security.

COURSE CONTENTS

1.0 Fundamentals of Digital Computer

Block diagram of a digital computer, functional parameters of CPU, Clock speed and word length, Functional blocks of a CPU: ALU and Control unit, types of memory RAM, ROM, purpose of cache memory

2.0 Number system

Binary Number system, Decimal, Binary, hexadecimal and octal codes, Conversion from one number system to another number system, ASCII, BCD and EBCDIC code for characters, concept of a byte and word.

3.0 DOS Operating Systems

Need for an operating system - List the various operating systems - Prompt, Types of commands, Internal & External Commands - Directories and files, wild cards, autoexec.bat, config.sys

4.0 Windows Operating Systems

Features of Windows desktop - Components of a Window - Function of each component of a Window - Method of starting a program using start button -Maximize, minimize, restore down and close buttons- Meaning of a file and flolder -Viewing the contents of hard disk drive using explorer -Finding a file - Formatting a floppy disk using explore option - Installing and uninstalling new software using control panel - installing and un inistalling a new hardware using control panel - Drive space - disk defragmentation - Installing a printer - Changing resolution, colour, appearance and screensaver options of the display - Changing the system date and time

5.0 Features of Internet

Computer network -Local area network - Wide area network - Compare Internet & Intranet - Internet service provider- Role of a modem in accessing the Internet- Installation of a MODEM using control panel - Web browser software - Structure of a Universal Resource Locator - World Wide Web, FTP, telnet and E-mail -Sending and receiving E-mail - Connection methods - Address format and IP address - DNS – DHCP- role of search engines with examples- Differences between search engines and directory - Social Network sites - Internet Security

REFERENCE BOOKS

1. Computer Science Theory & Application   - E. Balaguruswamy, B. Sushila

2. Introduction to Computers (Special Indian Edition)   - Peter Norton

Fundamentals of C PROGRAMMING
(Common with Information Technology)

Subject : **Fundamentals of C Programming**
Subject Code : **CM – 106 / IT-106**
Periods per Week : **4**
Periods per Year : **60**

Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	Practice			
1	Programming Methodology	4	2	09	2	½
2	Introduction to C Language	3	0	04	2	0
3	Constants, Variables and Data Types in C	5	0	09	2	½
4	Operators and Expressions in C	6	2	19	2	1½
5	Managing Input and Output Operations	4	0	09	2	½
6	Decision making	5	4	16	3	1
7	Looping concepts	5	4	21	3	1½
8	Arrays	6	2	19	2	1½
9	Basics of Structures and Unions	6	2	14	2	1
	Total	**44**	**16**	**120**	**20**	**8**

Table caption: TIME SCHEDULE AND BLUE PRINT

Objectives:

On completion of the study of the subject the student shall be able to

1.0 Programming Methodology.

    1.1.   State different steps involved in problem solving.

    1.2.   Define algorithm.

    1.3.   Discuss characteristics of algorithm.

1.4.   Define a program

1.5.   Differentiate between program and algorithm.

1.6.   State the steps involved in algorithm development.

1.7.   Differentiate algorithm and flowchart.

1.8.   Develop algorithms for simple problems.

1.9.   Draw the symbols used in flowcharts.

1.10. Draw flowcharts for simple problems.

2.0 Introduction to C Language

2.1 Define High level language and low level language

2.2 Describe the history of C language

2.3 State the importance of C language

2.4 Define & Differentiate Compiler, Assembler.

2.5 Explain the structure of C language

2.6 Describe the programming style of C language

2.7 Explain the steps involved in executing the C program

3.0 Understand Constants, Variables and Data Types in C

3.1 Describe character set.

3.2 Explain C Tokens

3.3 Describe Keywords and Identifiers

3.4 Explain Constants and Variables

3.5 Define Data type

3.6 Classify data types and explain them with examples.

3.7 Explain declaration of a variable

3.8 Explain assigning values to variables

4.0 Understand Operators and Expressions in C

4.1 Define an operator

4.2 Define an expression

4.3 Classify operators

4.4 Explain various arithmetic operators with examples

4.5 Illustrate the concept of relational operators

4.6 Explain logical operators

4.7 Describe various assignment operators

4.8 Illustrate nested assignment

4.9 Describe increment and decrement operators

4.10 Illustrate conditional operator

4.11 Explain bitwise operators

4.12 Explain special operators

4.13 Illustrate arithmetic expressions

4.14 Describe precedence and associativity of operators

4.15 Describe evaluation of expressions

4.16 Illustrate type conversion techniques and discuss them

5.0 Understand Input and Output Operations

5.1 Illustrate reading a character using getchar()

5.2 Illustrate writing a character using putchar()

5.3 Illustrate formatted input using scanf()

5.4 Write sample programs for formatted input using scanf()

5.5 Describe formatted output with example programs

5.6 Write sample programs for formatted output using printf()

5.7 Illustrate Preprocessor directive - #include, #define

6.0 Understand Decision making

6.1 Discuss decision making in programming

6.2 Explain decision making statements

6.3 Describe relational operators with their precedence

6.4 Explain logical operators and their precedence

6.5 Explain how to evaluate a logical expression.

6.6 Discuss about simple if statement with syntax and sample program

6.7 Discuss about nested if..else statements with syntax and sample program

6.8 Discuss about else if ladder with syntax and sample program

6.9 State the importance of indentation

6.10   Discuss about switch statement with syntax and sample program

6.11   Illustrate conditional operator

7.0 Understand Looping concepts

7.1 Define looping

7.2 List loop statements

7.3 Explain while statement with syntax and sample program

7.4 Explain do- while statement with syntax and sample program

7.5 Explain 'for' loop statement with syntax and sample program

7.6 Define nesting of loops and implement it

7.7 Compare different loop statements

7.8 Differentiate break and continue statements.

7.9 Define structured programming

8.0 Understand Arrays

8.1 Define Array

8.2 Describe declaration and initialization of One Dimensional Array with syntax and sample program

8.3 Explain accessing the elements in the Array with sample program

8.4 Explain reordering an array in ascending order

8.5 Explain declaration and initialization of two Dimensional Arrays.

8.6 Illustrate the concept of arrays with sample programs on matrix addition and matrix multiplication

9.0 Understand basics of Structures and Unions

9.1   Define a structure.

9.2   Illustrate creating a structure

9.3   Illustrate declaring structure variables

9.4   Explain accessing of the structure members

9.5   Explain array of structures

9.6   Illustrate concept of structure assignment.

9.7   Explain how to find size of a structure.

9.8   Discuss nested structure concept.

9.9   Illustrate the Structures containing arrays, arrays of structures containing arrays.

9.10   Define Union and illustrate use of a union.

9.11   Differences between Structures and Union

COURSE CONTENTS:

1. Programming Methodology.

Steps involved in problem solving - Define algorithm , Program - Characteristics of algorithm - Differentiate between program and algorithm- Steps involved in algorithm development - Differentiate algorithm and flowchart - Algorithms for simple problems - Symbols used in flowcharts -Flowcharts for simple problems.

2. Introduction to C Language

Define High level language and low level language-history of C language - importance of C language – Define & Differentiate Compiler, Assembler - structure of C language - programming style of C language - steps involved in executing the C program

3. Understand Constants, Variables and Data Types in C

Character set - C Tokens - Keywords and Identifiers- Constants and Variables - data types and classification - declaration of a variable - Assigning values to variables

4. Understand Operators and Expressions in C

Define an operator - Define an expression -Classify operators - List and explain various arithmetic operators with examples -Illustrate the concept of relational operators - List logical operators - various assignment operators - Nested assignment - Increment and decrement operators - Conditional operator - List bitwise operators -List various special operators- Arithmetic expressions-   precedence and associativity of operators- Evaluation of expressions - Various type conversion techniques and discuss them.

5. Managing Input and Output Operations

Reading and writing characters - formatted input and output -Preprocessor Directive #include

6. Understand Decision making

Decision making in programming - Relational operators with their precedence -Logical operators and their precedence -Evaluate a logical expression -   simple if statement with sample program

7. Understand Looping concepts

Classification of various loop statements- while statement – do-while statement - for loop statement - nesting of loops- Comparisons of different loop statements - break and continue statements - structured programming

8. **Understand Arrays**

Arrays -declaration and initialization of One Dimensional -Array -Accessing the elements in the Array - Reordering an array in ascending order - Declaration and initialization of two Dimensional Arrays - sample programs on matrix addition and matrix multiplication.

9. **Understand basics of Structures and Unions**

Structure- Creating a structure - Declaring structure variables -Accessing the structure members - Array of structures - Concept of structure assignment -Find size of a structure - Nested structure concept - Concept of pointer to structure - Structure as function arguments and structures as function values - Structures containing arrays, arrays of structures containing arrays - Concept of structures containing pointers - Self referential structures with examples - Union and illustrate use of a union – difference between Structures and Union.

REFERENCE BOOKS

1. Let Us C   -- Yeshwanth Kanetkar   BPB Publications
2. Programming in ANSI C   -- E. Balaguruswamy   Tata McGrawHill
3. Programming with C   -- Gottfried   Schaum'outline
4. C The complete Reference   -- Schildt   Tata McGraw Hill

ENGINEERING DRAWING- I

Subject Title : **Engineering Drawing- I**

Subject Code : *CM–107*

Periods/Week : **06**
Periods Per Year : **90**

TIME SCHEDULE

S.No	Major Topics	No. of Drawing plates	Periods	Weightage of Marks	Short Answer Questions	Essay type Questions
1	Importance of Engineering Drawing	--	01	-	-	-
2	Engineering Drawing Instruments	01	05	-	-	-
3	Free hand lettering & Numbering	01	06	05	1	-
4	Dimensioning Practice	01	09	05	1	-
5	Geometrical constructions	03	24	25	1	02
6	Projection of points, Lines, Planes & Solids	03	21	25	1	02
7	Sectional views	03	24	20	-	02
	Total	**12**	**90**	**80**	**04**	**06**

The Course is aimed at developing basic graphic skills so as to enable them to use these skills
in preparation of engineering drawings, their reading and interpretation

OBJECTIVES
Upon completion of the subject the student shall be able to

1.0 Understand the basic concepts of Engineering Drawing
    1.1 State the importance of drawing as an engineering communication
        medium
    1.2 State the necessity of B.I.S. Code of practice for Engineering Drawing.
    1.3 Explain the linkages between Engineering drawing and other subjects of
        study in diploma course.
2.0 Use of Engineering Drawing Instruments
    2.1 Select the correct instruments and draw lines of different orientation.
    2.2 Select the correct instruments and draw small and large Circles.
    2.3 Select the correct instruments for measuring distances on the drawing.
    2.4 Use correct grade of pencil for different types of lines, thickness and
        given function.
    2.5 Select and use appropriate scales for a given application.

2.6   Identify different drawing sheet sizes as per I.S. and Standard Lay- outs.
2.7   Prepare Title block as per B.I.S. Specifications.
2.8   Identify the steps to be taken to keep the drawing clean and tidy.

Drawing Plate 1: (Having Four exercises)

3.0   Write Free Hand Lettering and Numbers
3.1   Write titles using sloping lettering and numerals of 7mm, 10mm and 14mm height
3.2   Write titles using vertical lettering and numerals of 7mm, 10mm and 14mm height
3.3   Select suitable sizes of lettering for different layouts and applications
3.4   Practice the use of lettering stencils.

Drawing plate 2: (Having 5 to 6 exercises)

4.0   Understand Dimensioning Practice
4.1   Define "Dimensioning.
4.2   State the need of dimensioning the drawing according to accepted standard.
4.3   Identify notations of Dimensioning used in dimensioned drawing.
4.4   Identify the system of placement of dimensions in the given dimensioned drawing.
4.5   Dimension a given drawing using standard notations and desired system of dimensioning.
4.6   Dimension standard features applying necessary rules.
4.7   Arrange dimensions in a desired method given in a drawing.
4.8   Identify the departures if any made in the given dimensioned drawing with reference to SP-46-1988, and dimension the same correctly.

Drawing Plate 3: (Having 8 to10 exercises)

5.0   Apply Principles of Geometric Constructions
5.1   Divide a given line into desired number of equal parts internally.
5.2   Draw tangent lines and arcs.
5.3   Use General method to construct any polygon.
5.4   Explain the importance of conics
5.5   Construct conics (ellipse, parabola and hyperbola) by general method
5.6   Construct ellipse by concentric circles method
5.7   Construct parabola by rectangle method
5.8   Construct rectangular hyperbola from the given data.
5.9   Construct involute from the given data.
5.10   Construct cycloid and helix from the given data.
5.11   State the applications of the above constructions in engineering practice.
Drawing Plate -4: Having problems up to construction of polygon
Drawing Plate -5: Having problems of construction of conics
Drawing Plate -6: Having problems of construction of involute, cycloid and helix

6.0   Apply Principles of Projection of points, lines, planes & solids
6.1   Visualize the objects
6.2   Explain the I-angle and III-angle projections
6.2   Practice the I-angle projections
6.3   Draw the projection of a point with respect to reference planes (HP&VP)
6.4   Draw the projections of straight lines with respect to two reference Planes (up to lines parallel to one plane and inclined to other plane)

6.5   Draw the projections of planes (up to planes perpendicular to one plane and inclined to other plane)

6.6   Draw the projections of solids (up to axis of solids parallel to one plane and inclined to other plane)

Drawing Plate -7: Having problems up to projection of points and Lines (15 exercises)
Drawing Plate -8: Having problems of projection of planes (6 exercises)

7.0   Appreciate the need of Sectional Views
     7.1   Explain the need to draw sectional views.
     7.2   Select the section plane for a given component to reveal maximum information.
     7.3   Explain the positions of section plane with reference planes
     7.4   Differentiate between true shape and apparent shape of section
     7.5   Draw sectional views and true sections of regular solids discussed in 6.0
     7.6   Apply principles of hatching.

Drawing Plate– 9: Having problems of section of solids (6 exercises)
Drawing Plate–10: Having problems of section of solids (6 exercises)

Competencies and Key competencies to be achieved by the student

S.No	Major topic	Key Competency
1.	Importance of Engineering Drawing	• Explain the linkages between Engineering drawing and other subjects of study in Diploma course.
2.	Engineering Drawing Instruments	• Select the correct instruments to draw various entities in different orientation
3.	Free hand lettering & Numbering	• Write titles using sloping and vertical lettering and numerals as per B.I.S (Bureau of Indian standards)
4.	Dimensioning Practice	• Dimension a given drawing using standard notations and desired system of dimensioning
5.	Geometrical construction	• Construct ellipse, parabola, rectangular hyperbola, involute, cycloid and helix from the given data.
6.	Projection of points, Lines, Planes & Solids	• Draw the projection of a point, straight lines, planes & solids with respect to reference planes (HP& VP)
7.	Sectional views	• Differentiate between true shape and apparent shape of section • Use conventional representation of Engineering materials as per B.I.S. Code. • Apply principles of hatching. • Draw simple sections of regular solids

COURSE CONTENT

NOTE

    1.   B.I.S Specification should invariably be followed in all the topics.
    2.   A-3 Size Drawing Sheets are to be used for all Drawing Practice Exercises.

1.0   The importance of Engineering Drawing
Explanation of the scope and objectives of the subject of Engineering Drawing Its importance as a graphic communication -Need for preparing drawing as per standards – SP-46 –1988 – Mention B.I.S - Role of drawing in -engineering education – Link between Engineering drawing and other subjects of study.

2.0   Engineering drawing Instruments
Classifications: Basic Tools, tools for drawing straight lines, tools for curved lines, tools for measuring distances and special tools like mini drafter & drafting machine – Mentioning of names under each classification and their brief description -Scales: Recommended scales reduced & enlarged -Lines: Types of lines, selection of line thickness - Selection of Pencils -Sheet Sizes: A0, A1, A2, A3, A4, A5, Layout of drawing sheets in respect of A0, A1, A3 sizes, Sizes of the Title block and its contents, Care and maintenance of Drawing Sheet, Drawing plate:
Lay out of sheet – as per SP-46-1988 to a suitable scale.
Simple Exercises on the use of Drawing Instruments. Importance of Title Block.

3.0   Free hand lettering & numbering
Importance of lettering – Types of lettering -Guide Lines for Lettering
Practicing of letters & numbers of given sizes (7mm, 10mm and 14mm)
Advantages of single stroke or simple style of lettering - Use of lettering stencils

4.0   Dimensioning practice
Purpose of engineering Drawing, Need of B.I.S code in dimensioning -Shape description of an Engineering object -Definition of Dimensioning size description -Location of features, surface finish, fully dimensioned Drawing - Notations or tools of dimensioning, dimension line extension line, leader line, arrows, symbols, number and notes, rules to be observed in the use of above tools -Placing dimensions: Aligned system and unidirectional system (SP-46-1988)-Arrangement of dimensions Chain, parallel, combined progressive, and dimensioning by co-ordinate methods-The rules for dimensioning standard, features "Circles (holes) arcs, angles, tapers, chamfers, and dimension of narrow spaces.

5.0   Geometric Construction
Division of a line: to divide a straight line into given number of equal parts internally examples in engineering application.
Construction of tangent lines: to draw tangent lines touching circles internally and externally.
Construction of tangent arcs
i) To draw tangent arc of given radius to touch two lines inclined at given
    angle (acute, right and obtuse angles).
ii)Tangent arc of given radius touching a circle or an arc and a given line.
iii)Tangent arcs of radius R, touching two given circles internally and externally.
Construction of polygon:construction of any regular polygon of given side length using general method
Conical Curves: Explanation of Ellipse, Parabola, Hyperbola, as sections of a double cone and a loci of a moving point, Eccentricity of above curves – Their Engg. application viz.   Projectiles, reflectors, P-V Diagram of a Hyperbolic process,
Construction of any conic section of given eccentricity by general method
Construction of ellipse by concentric circles method

Construction of parabola by rectangle method
Construction of rectangular hyperbola
General Curves: Involute, Cycloid and Helix, explanations as locus of a moving point, their engineering application, viz, Gear tooth profile, screw threads, springs etc. - their construction

6.0   Projection of points, lines and planes & solids
Projecting a point on two planes of projection -Projecting a point on three planes of projection -Projection of straight line.
(a) Parallel to both the planes.
(b) Perpendicular to one of the planes.
(c) inclined to one plane and parallel to other planes
Projection of regular planes
(a) Plane perpendicular to HP and parallel to VP and vice versa.
(c) Plane perpendicular to HP and inclined to VP and vice versa.

Projection of regular solids
(a) Axis perpendicular to one of the planes
(b) Axis parallel to VP and inclined to HP and vice versa.

7.0   Sectional views
Need for drawing sectional views – what is a sectional view - Location of cutting plane – Purpose of cutting plane line – Selection of cutting plane to give maximum information (vertical and offset planes) - Hatching – Section of regular solids inclined to one plane and parallel to other plane

REFERENCE BOOKS

Engineering Graphics by P I Varghese – (McGraw-hill)
Engineering Drawing by Basant Agarwal & C.M Agarwal - (McGraw-hill)
Engineering Drawing by N.D.Bhatt.
T.S.M. & S.S.M on " Technical Drawing" prepared by T.T.T.I., Madras.
SP-46-1998 – Bureau of Indian Standards.

Fundamentals of C PROGRAMMING LAB

Subject Title   :   **Fundamentals of C PROGRAMMING LAB**
Subject Code   :   **CM – 108 / IT-108**
Periods per Week   :   **6**
Periods per Year   :   **90**

LIST OF EXPERIMENTS

1. Exercise on structure of C program
2. Exercise on Keywords and identifiers
3. Exercise on constants and variables
4. Execution of simple C program
5. Exercise on operators and expressions
6. Exercise on special operators
7. Exercise on input and output of characters
8. Exercise on formatted input and output
9. Exercise on simple if statement
10. Exercise on if..else statement
11. Exercise on else..if ladder statement
12. Exercise on switch statement
13. Exercise on conditional operator
14. Exercise on while statement
15. Exercise on for statement
16. Exercise on do..while statement
17. Exercise on one dimensional arrays
18. Exercise on two dimensional arrays
19. Exercise on structure
20. Exercise on array of structures

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Exercise on structure of C program	For a given C program, identify the different building blocks	❖ Identify different building block in a C program
2	Exercise on Keywords and identifiers	For a given C program identify the keywords and identifiers	❖ Identify different keywords ❖ Check whether the keywords are in lowercase ❖ Differentiate identifiers and keywords
3	Exercise on constants and variables	For a given C program identify the constants and variables	❖ Identify the constants ❖ Identify the variables ❖ Declare variables with proper names ❖ Know the assignment of values to variables
4	Execution of simple C program	Execute a simple C program	❖ Acquaint with C program editing ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program
5	Exercise on operators and expressions	Write a C program that uses different arithmetic operators	❖ Identify different arithmetic operators ❖ Build arithmetic expressions ❖ Identify the priorities of operators ❖ Evaluate arithmetic expression ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check the output for its correctness
6	Exercise on special operators	Write a C program that uses special operators	❖ Identify different special operators ❖ Build expressions using special operators ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check the output for its correctness
7	Exercise on input and output of characters	Write a C program for reading and writing characters	❖ Know the use of getchar() function ❖ Know the use of putchar() function ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check whether the correct output is printed for the given input
8	Exercise on formatted input and output	Write a C program using formatted input and formatted output	❖ Know the use of format string for different types of data in scanf() function ❖ Know the use of format string for different types of data in printf() function ❖ Check whether the data is read in correct format ❖ Check whether the data is printed in correct

			format
9	Exercise on simple if statement	Write a C program using simple if statement	❖ Build a relational expression ❖ Use the if statement for decision making ❖ Rectify the syntax errors ❖ Check the output for correctness
10	Exercise on if..else statement	Write a C program using if..else statement	❖ Build a relational expression ❖ Use the if..else statement for decision making ❖ Rectify the syntax errors ❖ Check the output for correctness
11	Exercise on else..if ladder statement	Write a C program using else..if ladder statement	❖ Use else..if ladder statements with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check the output for correctness
12	Exercise on switch statement	Write a C program using switch statement	❖ Use switch statement with correct syntax ❖ Identify the differences between switch and else..if ladder ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check the output for correctness
13	Exercise on conditional operator	Write a C program using (**?** **:**) conditional operator	❖ Build the three expressions for conditional operator ❖ Use conditional operator with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Differentiate conditional operator and if..else statement
14	Exercise on while statement	Write a C program using while statement	❖ Build the termination condition for looping ❖ Use while statement with correct syntax ❖ Check whether correct number of iterations are performed by the while loop ❖ Rectify the syntax errors ❖ Debug logical errors
15	Exercise on **for** statement	Write a C program using for statement	❖ Build the initial, increment and termination conditions for looping ❖ Use for statement with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check whether correct number of iterations are performed by the **for** loop ❖ Differentiate **for** and **while** statements
16	Exercise on **do..while** statement	Write a C program using do statement	❖ Build the termination condition for looping ❖ Use do statement with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check whether correct number of iterations are performed by the while loop ❖ Differentiate **do..while,while** and **for**

			statements
17	Exercise on one dimensional arrays	Write a C program to create and access one dimensional array	❖ Create a one dimensional array with correct syntax ❖ Store elements into array ❖ Read elements from array ❖ Validate boundary conditions while accessing elements of array ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
18	Exercise on two dimensional arrays	Write a C program to create and access two dimensional array	❖ Create a two dimensional array with correct syntax ❖ Store elements into array ❖ Read elements from array ❖ Validate boundary conditions while accessing elements of array ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
19	Exercise on structure	Write a C program using structure	❖ Define a structure with correct syntax ❖ Identify different members of a structure ❖ Declare a structure variable ❖ Access different members of structure ❖ Observe the size of the structure ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
20	Exercise on array of structures	Write a C program to create an array of structures and store and retrieve data from that array	❖ Define a structure with correct syntax ❖ Identify different members of a structure ❖ Declare a structure variable ❖ Create an array of structure ❖ Access individual element of the array of structure ❖ Access different members of structure ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input

PHYSICS LAB - I

(Common for all branches)

Subject Title	:	**Physics Lab - I**
Subject Code	:	**CM -109**
Periods per week	:	**03**
Total periods per semester	:	**22**

TIME SCHEDULE

S.No	Name of the Experiment	No. of Periods
1.	Hands on practice on Vernier Calipers	03
2.	Hands on practice on Screw gauge	03
3.	Verification of Parallelogram law of forces and Triangle law of forces	03
4.	Boyle's law verification	03
5.	Refractive index of solid using traveling microscope	03
6.	Meter bridge	03
	Revision	02
	Test	02
	Total:	**22**

Objectives:

Upon completion of the course the student shall be able to

1.0   Practice the Vernier caliper to determine the volume of a cylinder and sphere

2.0   Practice the Screw gauge to determine thickness of a glass plate and cross   section of a wire

3.0   Verify the parallelogram law and Triangle law of forces.

4.0   Verify the Boyle's law employing a Quill tube

5.0   Determine the refractive index of a solid using travelling microscope

6.0   Determine the specific resistance of wire material using Meter Bridge

Competencies and Key competencies to be achieved by the student

Name of the Experiment (No of Periods)	Competencies	Key competencies
1. Hands on practice on Vernier Calipers(03)	• Find the Least count • Fix the specimen in position • Read the scales • Calculate the volume of given object	• Read the scales • Calculate the volume of given object
2. Hands on practice on Screw gauge(03)	• Find the Least count • Fix the specimen in position • Read the scales • Calculate thickness of glass plate and cross section of wire	• Read the scales • Calculate thickness of given glass plate • Calculate cross section of wire
3. Verification of Parallelogram law of forces and Triangle law of forces(03)	• Fix suitable weights • Note the positions of threads on drawing sheet • Find the angle at equilibrium point • Construct parallelogram • Compare the measured diagonal • Construct triangle • Find the length of sides • Compare the ratios	• Find the angle at equilibrium point • Constructing parallelogram • Construct triangle • Compare the ratios of force and length

4. Boyle's law verification (03)	• Note the atmospheric pressure • Fix the quill tube to retort stand • Find the length of air column • Find the pressure of enclosed air • Find and compare the calculated value P x l	• Find the length of air column • Find the pressure of enclosed air • Find the value P x l
5. Refractive index of solid using traveling microscope(03)	• Find the least count of vernier on microscope • Place the graph paper below microscope • Read the scale • Calculate the refractive index of glass slab	• Read the scale • Calculate the refractive index of glass slab
6. Meter bridge(03)	• Make the circuit connections • Find the balancing length • Calculate unknown resistance • Find the radius of wire • Calculate the specific resistance	• Find the balancing length • Calculate unknown resistance • Calculate the specific resistance

CHEMISTRY LAB - I

(Common for all branches)

Subject Title   :   Chemistry Lab - I

Subject Code   :   CM-110

Periods per week   :   03

Total periods per semester :   22

TIMESCHEDULE

S.No	Name of the Experiment	No. of Periods
1.	Familiarization of methods of Volumetric Analysis	03
2.	Preparation of Std Na_2CO_3 solution and making solutions of different dilution	03
3.	Estimation of HCl solution using Std. Na_2CO_3 solution	03
4.	Estimation of NaOH using Std. HCl solution	03
5.	Estimation of H_2SO_4 using Std. NaOH solution	03
6.	Estimation of Mohr's Salt using Std. $KMnO_4$	03
	Revision	02
	Test	02
	Total:	**22**

COMPUTER FUNDEMENTALS LAB

(Common with Information Technology)

Subject Title   **: Computer Fundamentals Lab**
Subject Code   **: CM-111 / IT - 111**
Periods/Week   **: 3**
Periods/Semester   **: 45**

LIST OF EXPERIMENTS

1.0   BASICS

1.1. Identify the various components of a Computer system

1.2. Differentiate between hardware and software

1.3. State the configuration of a computer system

1.4. Exercise on creation of Text Files using Notepad, WordPad

1.5. Exercise on creation of .jpeg, .bmp Files using MS Paint

1.6. Exercise how to use calculator

2.0   DOS Operating System

2.1. Practice on Internal and External commands.

2.2. Create and use   Batch Files.

2.3. Know the usage of Editors.

3.0   WINDOWS Operating System

3.1.   Exercise on creation of folders and organizing files in different folders

3.2.   Exercise on use of Recycle Bin

3.3.   Exercise on use of My Computer and My Documents

3.4.   Exercise on creation of shortcut to files and folders (in other folders) on Desktop

3.5.   Exercise on arranging of icons – name wise, size, type, Modified

3.6.   Exercise on searching of files and folders

3.7.   Exercise on using of explorer for accessing of files and folders

3.8.   Exercise on organizing files / folders using copy and paste of files and folders

3.9.   Change resolution, colour, appearance, screen server options of Display

3.10.   Change the system date and time.

4.0 **Internet**

    4.1.   Importance of web browser software

    4.2.   Structure of URL

    4.3.   Create an E-mail account

    4.4.   Send an E-mail

    4.5.   Receive an E-mail

    4.6.   Browse the Internet using various search engines

OBJECTIVES AND KEY COMPETENCIES

S. No	Name of Experiment	Objectives	Key Competencies
1.	Identify the various components of a Computer system	⬥ Identify various Components of a System	❖ Check whether components are identified correctly ❖ Identify all components inside computer ❖ Identify all Peripherals connected ❖ Observe the functionality of all components like CPU, RAM, HDD, FDD, Motherboard
2.	Differentiate between hardware and software	⬥ To Differentiate between hardware and software	❖ Observe differences between hardware and software
3.	State the configuration of a computer system	⬥ Able to observe configuration of given system	❖ Use System icon in control panel ❖ Use system information in Accessories
4.	Practice on Internal and External commands.	⬥ To use internal commands ⬥ To use External commands	❖ Check whether able to use all internal commands using DOS ❖ Check whether able to use all external commands using DOS
5.	Create and use Batch Files.	⬥ Able to create Batch files ⬥ Able to create Autoexe.bat file	❖ Check whether able to create by taking set files in creating batch file ❖ Check whether able to create AUtoexe.bat file properly
6.	Know the usage of Edline Editor	⬥ Able to use edline command to create a file ⬥ Able to edit a file using edline command	❖ Check whether able to use edline command in DOS environment ❖ Check whether able to edit a file using edline command
7.	Exercise on creation of folders and organizing files in different folders	⬥ Able to create folder ⬥ Able to organize file in different folders	❖ Check whether able to create folder using right click on desktop ❖ Check whether able to create folder using windows explorer ❖ Observer in organizing files in different folders using windows explorer ❖ Observer in organizing files in different folders using My Computer
8.	Exercise on using Recycle Bin	⬥ Able to Use Recycle Bin	❖ Check Recycle bin whether able to use delete files ❖ Observe files were properly restored files

9.	Exercise on creation of .jpeg, .bmp Files using MS Paint	⬇ Able to create picture file in .jpeg format ⬇ Able to create picture file in .bmp format	❖ Check whether able to create picture file .jpeg format properly ❖ Check whether able to create picture file in .bmp format properly
10.	Exercise on use of My Computer and My Documents	⬇ Able to Access files and folders in C: Drive ⬇ Able Access files and folders in other drives ⬇ Able to use My Documents so that organize and access files and folders in it ⬇ Able to use My Documents so that Organizing files in My Music, My Pictures, My Videos ⬇ Able to create short cut for My Documents on desktop properly	❖ Check whether able to access files in C: Drive using My Computer correctly or not ❖ Check whether able to access files in other drives using My Computer correctly or not ❖ Check whether able use CD/DVD drive using My Computer ❖ Check whether able to organize files and folders in My Documents ❖ Check Whether able to organize files in My Music, My Pictures, My Videos in My Documents ❖ Check able to create short cut for My Documents on desktop properly
11.	Exercise on creation of shortcut to files and folders (in other folders) on Desktop	⬇ Able to create shortcut of files and folders on desktop	❖ Check whether can able to create shortcut for any files created on desktop ❖ Check whether can able to create shortcut for any folder created on desktop
12.	Exercise on arranging of icons – name wise, size, type, Modified	⬇ Able to arranging of icons – name wise, size, type, Modified on desktop	❖ Observe whether able to arrange of icons – name wise, size, type, Modified
13.	Exercise on searching of files and folders	⬇ Able to search of files and folders	❖ Check searching of files and folders
14.	Exercise on using of explorer for accessing of files and folders	⬇ Able to use of explorer for accessing of files and folder	❖ Check use of explorer for accessing of files and folders
15.	Exercise on organizing files / folders using copy and paste of files and folders	⬇ Able to organizing files / folders using copy and paste of files and folders using explorer ⬇ Able to organizing files / folders using copy and paste of files and folders using My Computer	❖ Check organizing files / folders using copy and paste of files and folders ❖ Check organizing files / folders using copy and paste of files and folders using my computer
16.	Exercise using Calculator from Accessories and through Run	⬇ Able to use calculator in Standard mode ⬇ Able to use calculator in Scientific mode	❖ Check calculator in Standard mode ❖ Check calculator in Scientific mode

17.	Exercise on shutdown of computer system	Able to shutdown of computer system	Check shutdown of computer system
18.	Exercise on understanding the use of Taskbar	Able to understand the use of Taskbar by opening some applications	Check the use of Taskbar by opening some applications
19.	Exercise on using of Internet Explorer or any other browser	Able to use of Internet Explorer Able to use of Mozilla Firefox Able to use of Google Chrome Able to use of opera	Check use of Internet Explorer Check use of Mozilla Firefox Check use of Google Chrome Check use of opera
20.	Change resolution, color, appearance, screen server options of Display	Able to change resolution, color, appearance, screen server options of Display	Check resolution, color, appearance, screen server options of Display
21.	Change the system date and time	Able to change system date and time	Check change system date and time
22.	Create an E-mail account	Able to create an E-mail account	Check able to create an E-mail account
23.	Send an E-mail	able to send an E-mail	Check able to send an E-mail
24.	Receive an E-mail	able to receive an E-mail	Check able to receive an E-mail
25.	Browse the Internet using various search engines	Able to search for a content in the Internet using various search engines	Check able to search for a content in the Internet using various search engines

II SEM

English for Polytechnics

(Common to All the Branches)
Second Semester

Subject Code   :CM- 201
No. of periods per week   : 3
No. of periods per year   : 45

Objectives and Key Competencies

Sl. No.	Name of the Unit	Objectives	Key Competencies
01	**Expressing Obligations**	• Express obligation • Express an order or a strong suggestion	• Learn the words to express suggestion and obligation • Express suggestions and obligations
02	**Fixing and Cancelling Appointments**	• Fix appointments • Reschedule or cancel appointments	• Know the importance of appointment • Learn expressions used in fixing an appointment • Know the ways of rescheduling and cancelling appointments
03	**Extending and Accepting Invitations**	• Extend invitations • Accept invitations	• Identify the phrases used to extend and accept invitations • Practise a few ways of extending invitations • Learn the expressions used for accepting invitations
04	**Giving Instructions**	• Understand instructions • Give instructions	• Know the need to give instructions • Learn the steps involved in giving instructions

05	**Asking for and Giving Directions**	• Ask for directions • Give directions	• Practise giving instructions • Know the words and phrases used often in giving directions • Learn how to ask for and give directions • Know the common errors in giving directions
06	**Describing Words**	• Listen for general comprehension • Listen for specific details • identify adjectives and know what an adjective is • use adjectives accurately	• Listen for main idea and minute details • Learn several adjectives • Know the common errors in the use of adjectives
07	**The Here and Now**	• Listen for general comprehension • Listen for specific details • identify prepositions and understand what prepositions are • Use prepositions	• Listen for main idea and minute details • Learn the prepositions of place • Learn the prepositions of time • Learn the common errors in the use of prepositions
08	**An Environmental Challenge**	• Comprehend the main idea • Learn new words	• Learn how to identify the central idea • Learn some new words
09	**The Will to Succeed**	• Understand the main idea • Learn narrative style of writing	• Know the secret of success of a woman entrepreneur • Know the narrative style of writing • Learn new words

10	**Waiting for Mr. Clean**	• Understand the main idea • Identify conversational style of writing • Learn new words	• Learn to note down the central idea of a paragraph • Learn new words
11	**Reported Speech**	• Understand what reported speech is • Report something spoken by others	• Learn two ways of reporting a speaker's words • Learn how to change from direct speech to indirect speech
12	**Error Analysis-I**	• Identify common errors in sentences • Correct errors in the usage of nouns, pronouns and verbs	• Know the various errors in spoken and written English • Identify the common errors • Correct the errors in nouns, pronouns and verbs
13	**Error Analysis – II**	• Identify the errors in usage of English • Correct errors in the usage of articles, adjectives, adverbs, prepositions and conjunctions	• Correct the errors in the usage of articles, adjectives, adverbs, prepositions and conjunctions • Rewrite a paragraph correcting the errors
14	**Error Analysis – III**	• Correct errors in vocabulary, questions, subject-verb agreement, homophones • Identify errors of redundancy	• Correct the errors in the usage of vocabulary and in framing questions • Correct the errors in concord and redundancy
15	**Data Interpretation - I**	• Study and understand the information in flow charts • analyse/interpret flow charts • Write a paragraph using the	• Study the data given in flow charts • analyse the data given in flow charts • Write a paragraph using the

		data given	data given
16	**Data Interpretation – II**	• Understand the information in a tree diagram • Analyse the data • Write a paragraph using the data given	• Study the data given in tree diagrams • analyse the data given in tree diagrams • Write a paragraph using the data given
17	**Data Interpretation – III**	• Understand the data in the table • Present the data given in a table • Write a paragraph using he data given	• Study the data given in tables • analyse the data given in tables • Write a paragraph using the data given
18	**Resume**	• Understand what a resume is • Prepare a resume	• Learn the salient features of a resume • Observe a sample resume given • Prepare a resume
19	**Cover Letter**	• Understand what a cover letter is • Write a cover letter	• Know the importance of a cover letter • Read the sample cover letter • Write a cover letter
20	**Note Making**	• Identify important words and ideas in a text • Learn how to make notes using the cue method	• Know the importance of making notes • Look for the key words given in the text • Observe the sample outline using cue method • Make notes using cue and mapping methods

21	**Writing a Report**	• Understand the format of a report of an industrial visit	• Learn the various kinds of reports
		• Write a report using the format	• Observe the format of a report of an industrial visit
			• Learn the tips to write a report
			• Write a report

Weightage Table

Sl. No	Module	Short Questions	Essay questions
1	Speaking	8	1
2	Grammar	12	--
3	Reading	---	2
4	Writing	---	5

ENGINEERING MATHEMATICS - II

(Common to all branches)

Subject title	:	**Engineering Mathematics-II**
Subject code	:	**CM-202**
Periods per week	:	**5**
Total Periods per Semester	:	**75**

Time Schedule with BLUEPRINT

S. No	Major Topic	No of Periods		Weightage of Marks	Short Type			Essay Type		
S.No	**Unit-I Co-ordinate Geometry**	**Theory**	**Practice**		**R**	**U**	**App**	**R**	**U**	**App**
1	Straight Lines	6	2	13	2	2	0	0	1/2	0
2	Circle	6	2	13	2	2	0	0	1/2	0
	Unit -II Differential Calculus									
3	Limits and Continuity	6	2	10	2	3	0	0	0	0
4	Differentiation	20	10	48	2	2	0	2	2	0
	Unit -III Applications of Differentiation									
5	Geometrical Applications	8	3	19	2	0	0	0	1/2	1
6	Maxima and Minima	7	3	17	1	0	0	0	1/2	1
	Total	53	22	120	11	9	0	2	4	2
	Marks				22	18	0	20	40	20

R:	**Remembering type**	:	42 marks
U:	**Understanding type**	:	58 marks
App:	**Application type**	:	20 marks

Objectives

Upon completion of the course the student shall be able to:

UNIT - I

Coordinate Geometry

1.0 Solve the problems on Straight lines

  1.1 Write the different forms of a straight line – point slope form, two point form, intercept form, normal form and general form

  1.2 Solve simple problems on the above forms

  1.3 Find distance of a point from a line, acute angle between two lines, intersection of two non-parallel lines and distance between two parallel lines.

2.0 Solve the problems on Circles

  2.1 Define locus of a point – circle and its equation.

  2.2 Find the equation of a circle given

      (i)   Center and radius

      (ii)   Two ends of a diameter

      (iii)   Centre and a point on the circumference

      (iv)   Three non-collinear points

      (v)   Centre and tangent

  2.3 Write the general equation of a circle and find the Centre and radius.

  2.4 Write the equation of tangent and normal at a point on the circle.

  2.5 Solve the problems to find the equations of tangent and normal.

UNIT - II

Differential Calculus

3.0 Use the concepts of Limit and Continuity for solving the problems

  3.1 Explain the concept of limit and meaning of $\lim\limits_{x \to a} f(x) = l$ and state the properties of limits.

3.2 Mention the Standard limits $\lim\limits_{x \to a} \dfrac{x^n - a^n}{x - a}$, $\lim\limits_{x \to 0} \dfrac{\sin x}{x}$, $\lim\limits_{x \to 0} \dfrac{\tan x}{x}$, $\lim\limits_{x \to 0} \dfrac{a^x - 1}{x}$,

$\lim\limits_{x \to 0} \dfrac{e^x - 1}{x}$, $\lim\limits_{x \to 0} (1 + x)^{\frac{1}{x}}$, $\lim\limits_{x \to \infty} \left(1 + \dfrac{1}{x}\right)^x$ (All without proof).

3.3 Solve the problems using the above standard limits

3.4 Evaluate the limits of the type $\lim\limits_{x \to l} \dfrac{a x^2 + b x + c}{\alpha x^2 + \beta x + \gamma}$ and $\lim\limits_{x \to \infty} \dfrac{f(x)}{g(x)}$

3.5 Explain the concept of continuity of a function at a point and on an interval with some examples whether a given function is continuous or not.

4.0 Appreciate Differentiation and its meaning in engineering situations

4.1 State the concept of derivative of a function y = f(x) – definition, first principle as

$\lim\limits_{h \to 0} \dfrac{f(x + h) - f(x)}{h}$ and also provide standard notations to denote the derivative of a

function.

4.2 State the significance of derivative in scientific and engineering applications.

4.3 Find the derivatives of elementary functions like x^n, a^x, e^x, log x, sin x, cos x, tanx, Secx, Cosecx and Cot x using the first principles.

4.4 Find the derivatives of simple functions from the first principle.

4.5 State the rules of differentiation of sum, difference, scalar multiplication, product and quotient of functions with illustrative and simple examples.

4.6 Explain the method of differentiation of a function of a function (Chain rule) with illustrative examples such as

(i) $\sqrt{t^2 + \dfrac{2}{t}}$ (ii) $x^2 \sin 2x$ (iii) $\dfrac{x}{\sqrt{x^2 + 1}}$ (iv) $\log(\sin(\cos x))$.

4.7 Find the derivatives of Inverse Trigonometric functions and examples using the Trigonometric transformations.

4.8 Explain the method of differentiation of a function with respect to another function and also differentiation of parametric functions with examples.

4.9 Find the derivatives of hyperbolic functions.

4.10 Explain the procedures for finding the derivatives of implicit function with examples.

4.11 Explain the need of taking logarithms for differentiating some functions with examples like $[f(x)]^{g(x)}$.

4.12 Explain the concept of finding the higher order derivatives of second and third order with examples.

4.13 Explain the concept of functions of several variables, partial derivatives and difference between the ordinary and partial derivatives with simple examples.

4.14 Explain the definition of Homogenous function of degree n

4.15 Explain Euler's theorem for homogeneous functions with applications to simple problems.

UNIT - III

Applications of the Differentiation

5.0 Understand the Geometrical Applications of Derivatives

5.1 State the geometrical meaning of the derivative as the slope of the tangent to the curve y=f(x) at any point on the curve.

5.2 Explain the concept of derivative to find the slope of tangent and to find the equation of tangent and normal to the curve y=f(x) at any point on it.

5.3 Find the lengths of tangent, normal, sub-tangent and sub normal at any point on the curve y=f(x).

5.4 Explain the concept of angle between two curves and procedure for finding the angle between two given curves with illustrative examples.

6.0 Use Derivatives to find extreme values of functions

6.1 Define the concept of increasing and decreasing functions.

6.2 Explain the conditions to find points where the given function is increasing or decreasing with illustrative examples.

6.3 Explain the procedure to find the extreme values (maxima or minima) of a function of single variable - simple problems yielding maxima and minima.

6.4 Solve problems on maxima and minima in applications like finding areas, volumes, etc.

COURSE CONTENT

UNIT-I

Coordinate geometry

1. Straight lines: various forms of straight lines, angle between lines, perpendicular distance from a point, distance between parallel lines-examples.

2. Circle: locus of a point, Circle definition-Circle equation given (i) center and radius, (ii) two ends of a diameter (iii) Centre and a point on the circumference (iv) three non collinear

points and (v) Centre and tangent equation - general equation of a circle - finding center, radius: tangent, normal to circle at a point on it.

UNIT-II

Differential Calculus

3. Concept of Limit- Definition- Properties of Limits and Standard Limits -Simple Problems- Continuity of a function at a point- Simple Examples only.

4. Concept of derivative- definition (first principle)- different notations-derivatives of elementary functions - problems. Derivatives of sum, product, quotient, scalar multiplication of functions - problems. Chain rule, derivatives of inverse trigonometric functions, derivative of a function with respect to another function, derivative of parametric functions, derivative of hyperbolic, implicit functions, logarithmic differentiation – problems in each case. Higher order derivatives - examples – functions of several variables – partial differentiation, Euler's theorem-simple problems.

UNIT-III

Applications of Derivatives:

5. Geometrical meaning of the derivative, equations of Tangent and normal to a curve at any point. Lengths of tangent, normal, sub tangent and subnormal to the curve at any point. Angle between the curves - problems.

6. Applications of the derivative to find the extreme values – Increasing and decreasing functions, finding the maxima and minima of simple functions - problems leading to applications of maxima and minima.

Reference Books:

1.   Co-ordinate Geometry, by S.L Loney
2.   Thomas Calculus, Pearson Addison-Wesley publishers
3.   Calculus – I, by Shanti Narayan and Manicavachgam Pillai, S.V Publications

ENGINEERING PHYSICS-II

Subject Title	:	**Engineering Physics - II**
Subject Code	:	**CM -203**
Periods per week	:	**04**
Total periods per semester	:	**60**

TIME SCHEDULE

S.No	Major Topics	No. of Periods	Weightage of Marks	Short Answer Type (2 marks)	Essay Type (10 marks)
1.	Friction	08	14	2	1
2.	Work, Power and Energy	10	18	4	1
3.	Simple Harmonic Motion	12	28	4	2
4.	Sound	12	26	3	2
5.	Properties of matter	06	06	3	-
6.	Electricity & magnetism	12	28	4	2
	Total:	**60**	**120**	**20**	**8**

INTERNAL ASSESSMENT

UNIT TEST 1 : UNITS 1,2 and 3

UNIT TEST 2 : UNITS 4,5 and 6

OBJECTIVES
   Upon completion of the course the student shall be able to

1.0   Understand the concept of Friction
   1.1   Define friction and state its causes
   1.2   Classify the types of friction
   1.3   Explain the concept of Normal reaction
   1.4   State the laws of friction
   1.5   Define coefficients of friction
   1.6   Explain the Angle of friction
   1.7   Derive an expression for acceleration of a body on a rough horizontal surface
   1.8   Derive an expression for the displacement and time taken to come to rest over a rough horizontal surface
   1.9   List the Advantages and Disadvantages of friction
   1.10 Mention the methods of minimizing friction
   1.11 Solve the related numerical problems

2.0   Understand the concept of Work, Power, and Energy

2.1   Define the terms Work, Power and Energy.
2.2   State SI units and dimensional formula for Work, Power, and Energy
2.3   Define potential energy
2.4   Derive an expression for Potential energy with examples
2.5   Define kinetic energy
2.6   Derive an expression for kinetic energy with examples
2.7   State and prove Work- Energy theorem
2.8   Explain the relation between Kinetic energy and momentum
2.9   State the law of conservation of energy
2.10   Verify the law of conservation of energy in the case of a freely falling body
2.11   Solve the related numerical problems

3.0   Understand the concept of Simple harmonic motion
3.1   Define Simple harmonic motion
3.2   State the conditions of Simple harmonic motion
3.3   Give examples for Simple harmonic motion
3.4   Show that the tip of the projection of a body moving in circular path with uniform speed is SHM
3.5   Derive an expression for displacement of a body executing SHM
3.6   Derive an expression for velocity of a body executing SHM
3.7   Derive an expression for acceleration of a body executing SHM
3.8   Derive expressions for Time period and frequency of S H M
3.9   Define phase of S H M
3.10   Derive expression for Time period of a simple pendulum
3.11   State the laws of simple pendulum
3.12   Explain seconds pendulum
3.13   Solve the related numerical problems

4.0   Understand the concept of Sound
4.1   Define the term sound
4.2   Explain longitudinal and transverse wave motion
4.3   Distinguish between musical sound and noise
4.4   Explain noise pollution and state SI unit for noise
4.5   Explain causes of noise pollution
4.6   Explain effects of noise pollution
4.7   Explain methods of minimizing noise pollution
4.8   Explain the phenomenon of beats
4.9   List the applications of beats
4.10   Define Doppler effect
4.11   List the Applications of Doppler effect
4.12   Explain reverberation and reverberation time
4.13   Write Sabine's formula
4.14   Explain echoes
4.15   State conditions of a good auditorium
4.16   Solve the related numerical problems

5.0   Understand the properties of matter
5.1   Define terms Elasticity and plasticity
5.2   Define the terms stress and strain
5.3   State the units and dimensional formulae for stress and strain
5.4   State the Hooke's law
5.5   Define the surface tension

5.6   Explain Surface tension with reference to molecular theory
5.7   Define angle of contact
5.8   Define capillarity and state examples
5.9   Write the formula for surface tension based on capilarity
5.10   Explain the concept of Viscosity
5.11   Provide examples for surface tension and Viscosity
5.12   State Newton's formula for viscous force
5.13   Define co-efficient of viscosity
5.14   Explain the effect of temperature on viscosity of liquids and gases
5.15   State Poiseulle's equation for Co-efficient of viscosity
5.16   Solve the related numerical problems

6.0   Understand the concept of Electricity and Magnetism
6.1   Explain the concept of Electricity
6.2   State the Ohm's law
6.3   Explain the Ohm's law
6.4   Define specific resistance, conductance and their units
6.5   State Kichoff's laws
6.6   Explain Kichoff's laws
6.7   Describe Wheatstone's bridge with legible sketch
6.8   Derive an expression for balancing condition of Wheatstone's bridge
6.9   Explain the basic concept of Meter Bridge with legible sketch
6.10   Explain the concept of magnetism
6.11   State the Coulomb's inverse square law of magnetism
6.12   Define magnetic field and magnetic lines of force
6.13   State the Magnetic induction field strength-units and dimensions
6.14   Describe the moment of couple on a bar magnet placed in a uniform magnetic field
6.15   Solve the related numerical problems

COURSE CONTENT

1.   **Friction:**
      Introduction to friction- Causes- Types of friction- Laws of friction -Angle of friction—
      Motion of a body over a horizontal surface- Advantages and disadvantages of friction-
      Methods of reducing friction – Problems

2.   **Work, Power and Energy:**
      Work, Power and Energy- Definitions and explanation- potential energy- kinetic energy-
      Derivations of Potential and Kinetic energies-K.E and Momentum relation - Work-
      Energy theorem- Law of Conservation of energy- Problems

3.   **Simple Harmonic Motion:**
      Introduction- Conditions of SHM- Definition- Examples- Expressions for displacement,
      velocity, acceleration, Time period, frequency and phase in SHM- Time period of a simple
      pendulum- Laws of simple pendulum-seconds pendulum- Problems

4.   Sound:
Sound- Nature of sound- Types of wave motion - Musical sound and noise- Noise pollution – Causes & effects- Methods of reducing noise pollution- Beats- Doppler effect- Echo- Reverberation-Reverberation time-Sabine's formula-Condition of good auditorium- Problems

5.   Properties of matter
Definition of Elasticity –Definition of stress and strain -the units and dimensional formulae for stress and strain-The Hooke's law- Definition of surface tension- Explanation of Surface tension with reference to molecular theory - Definition of angle of contact - Definition of capillarity -The formula for surface tension based on capillarity - Explanation of concept of Viscosity - Examples for surface tension and Viscosity - Newton's formula for viscous force- Definition of co-efficient of viscosity- The effect of temperature on viscosity of liquids and gases - Poiseulle's equation for Co-efficient of viscosity- The related numerical problems

6.   Electricity & Magnetism:
Ohm's law and explanation- Specific resistance- Kirchoff's laws- Wheatstone's bridge - Meter bridge- Coulomb's inverse square law- magnetic field- magnetic lines of force-Magnetic induction field strength-moment of couple-problems.

REFERENCE BOOKS

1. Intermediate physics Volume- I & 2   Telugu Academy
2. Text book of physics   Resnick & Holiday
3. Engineering physics   Gaur and Gupta
4. Fundamental Physics Volume -1 & 2   K.L.Gomber and K.L.Gogia

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES- II

Subject Title	:	Engineering Chemistry and Environmental Studies- II
Subject Code	:	CM-204
Periods per week	:	04
Total periods per semester	:	60

TIMESCHEDULE

S.No	Major Topics	No. of Periods	Weightage of Marks	Short Answer Type (2 marks)	Essay Type (10 marks)
1.	PRINCIPLES OF METALLURGY	10	16	3	1
2.	ELECTRO CHEMISTRY	14	30	5	2
3.	CORROSION	08	14	2	1
4.	POLYMERS	12	28	4	2
5.	FUELS	06	14	2	1
6.	ENVIRONMENTAL STUDIES	10	18	4	1
	Total:	**60**	**120**	**20**	**8**

1.0   Principles of Metallurgy

1.1   List the Characteristics of Metals.

1.2   Distinguish between Metals and Non Metals

1.3   Define the terms 1.Mineral, 2.Ore, 3. Gangue, 4.Fluxand 5.Slag

1.4   Describe Froth Floatation method of concentration of ore.

1.5   Describe the methods involved in extraction of crude metal- Roasting, Calcination and Smelting.

1.6   Explain the purification of Metals by Electrolytic Refining

1.7   Define an Alloy

1.8   Write the Composition of the following alloys:1.Brass, 2.Germansilver, and Nichrome

1.9   List the uses of following Alloys: Brass, German silver, Nichrome

2.0   Electrochemistry

2.1   Define the terms1. conductor, 2. Insulator, 3.Electrolyteand 4.Non–electrolyte

2.2   Types of electrolytes.- strong and weak with examples.

2.3   Distinguish between metallic conductors and Electrolytic conductors.

2.4   Explain Arrhenius theory of electrolytic dissociation

2.5   Explain electrolysis of fused NaCl.

2.6	ExplainFaraday'slawsofelectrolysis
2.7	Define Chemicalequivalent, Electrochemicalequivalent.
2.8	Solve the NumericalproblemsbasedonFaraday'slawsofelectrolysis
2.9	DefineGalvaniccell
2.10	Explain the construction and working of Galvaniccell
2.11	Distinguishbetweenelectrolyticcellandgalvaniccell
2.12	Explain thestandardelectrodepotentials
2.13	Defineelectrochemicalseriesand explainitssignificance.
2.14	Define and explainemfofacell.
2.15	Solve the numericalproblemsonemfofcell

3.0   Corrosion

3.1	Define the term corrosion
3.2	Explain the Factorsinfluencingtherateofcorrosion
3.3	Explaintheconceptofelectrochemicaltheoryofcorrosion
3.4	Describetheformationofa)compositioncell,b)stresscell c)concentrationcell
3.5	Define rust and explainthemechanismofrustingofiron with equations.
3.6	Explainthemethodsofpreventionofcorrosion: a)Protectivecoatings
	b) Cathodicprotection(SacrificialanodeprocessandImpressed–voltage process)

4.0   Polymers

4.1	Explain theconceptofpolymerisation
4.2	Describe the methods of polymerisationa) addition polymerisationb) condensation polymerization with examples.
4.3	Definethetermplastic
4.4	Types of plasticswithexamples.
4.5	Distinguishbetweenthermoplasticsandthermosettingplastics
4.6	List the Characteristicsofplastics.
4.7	State the advantagesof plasticsovertraditionalmaterials
4.8	State the disadvantagesofusingplastics.
4.9	Explain the methodsofpreparation and uses of the followingplastics:
	1.Polythene, 2. PVC, 3.Teflon, 4. Polystyrene and 5. Urea formaldehyde 6. Bakelite (only flow chart i.e. without chemical equations).
4.10	Definethetermnaturalrubber
4.11	StatethestructuralformulaofNaturalrubber
4.12	ExplaintheprocessingofNaturalrubberfrom latex
4.13	List the Characteristicsofnaturalrubber
4.14	ExplaintheprocessofVulcanization
4.15	List the CharacteristicsofVulcanizedrubber
4.16	DefinethetermElastomer

4.17 Describe the preparation and uses of the following synthetic rubbers a) Butyl rubber, b) Buna-s and c)Neoprenerubber

5.0   Fuels

5.1   Definethetermfuel

5.2   Classify thefuelsbasedonphysicalstate –solid, liquidandgaseous fuels with examples.

5.3   Classify thefuelsbasedonoccurrence-primaryandsecondaryfuels with examples.

5.4   List the characteristicsof a goodfuel.

5.5   Statethecompositionandusesof the following gaseousfuels: a)watergas, b)producergas, c)naturalgas, d)coalgas, e)Biogas and f) acetylene

6.0.   ENVIRONMENTALSTUDIES

6.1.   Defineairpollution

6.2   Classify the airpollutants-basedonoriginandstateofmatter

6.3   Explainthecausesofairpollution

6.4   Explaintheuseandoverexploitationofforestresourcesanddeforestation

6.5   Explaintheeffectsofairpollutiononhumanbeings,plantsandanimals

6.6   Explainthegreenhouseeffect -ozonelayerdepletionandacidrain

6.7   Explainthemethodsofcontrolofairpollution

6.8   Definewaterpollution

6.9   Explainthecausesofwaterpollution

6.10 Explaintheeffectsofwaterpollutiononlivingandnonlivingthings

6.11 Understandthemethodsofcontrolofwaterpollution.

COURSE CONTENT

1.   PrinciplesofMetallurgy

Characteristics of Metals and distinctions between Metals and Non Metals, Metallurgy, ore, Gangue, Flux, Slag - Concentration of Ore –Froth floatation - Methods of Extraction of crude Metal – Roasting, Calcination, Smelting – Alloys – Composition and uses of Brass, German silverandNichrome

2.   Electrochemistry

Conductors, insulators, electrolytes - Arrhenius theory of electrolytic dissociation – electrolysis – Faraday's laws of electrolysis- numerical problems – Galvanic cell – standard electrode potential – electro chemical series– emfandnumericalproblemsonemfofacell

3.   Corrosion

Introduction - factors influencing corrosion - electrochemical theory of corrosion-composition,stressandconcentrationcells–rustingofiron and its mechanism – prevention of corrosion by coating methods, cathodic protection

4. **Polymers**

   Introduction – polymerization – types of polymerization – addition, condensation with examples – plastics – types of plastics – advantages of plastics over traditional materials – Disadvantages of using plastics – preparationandusesofthefollowingplastics:1.Polytehene2.PVC   3.Teflon 4.Polystyrene 5.Urea formaldehyde 6. Bakelite – Rubber – Natural rubber – processing from latex – Vulcanization – Elastomers – Butyl rubber, Buna-s, Neoprene rubberandtheiruses.

5. **Fuels**

   Definitionandclassificationoffuels–characteristicsofgoodfuel-compositionand
usesofgaseousfuels- a)watergas,b)producergas, c)naturalgas, d)coalgas,
      e)Biogas and f) acetylene

6. **ENVIRONMENTALSTUDIES**

   airpollution-causes-Effects– forestresources:uses and over exploitation, deforestation, acid rain, green house effect –ozone depletion – control of air pollution – Water pollution – causes – effects – controlmeasures

INTERNAL ASSESSMENT

UNIT TEST 1 :   UNITS 1,2 and 3

UNIT TEST 2 :   UNITS 4 and 5

REFERENCEBOOKS

1. Intermediate chemistry Vol 1&2   Telugu Acedemy

2. Engineering Chemistry   Jain & Jain

3. Engineering Chemistry   O.P. Agarwal, Hi-Tech.

4. Engineering Chemistry   Sharma

5. Engineering Chemistry   A.K. De

OFFICE AUTOMATION

(Common with Information Technology)

Subject   : Office Automation
Subject Code   : CM – 105
 Periods per Week : 4
Periods per Year   : 60

<table>
<tr><th colspan="7">TIME SCHEDULE AND BLUE PRINT</th></tr>
<tr><th>Unit No</th><th>Major Topic</th><th colspan="2">No of Periods</th><th>Weightage of marks</th><th>Short Type</th><th>Essay Type</th></tr>
<tr><th></th><th></th><th>Theory</th><th>Practice</th><th></th><th></th><th></th></tr>
<tr><td>1</td><td>Features of MS-WORD</td><td>15</td><td>0</td><td>25</td><td>5</td><td>1 ½</td></tr>
<tr><td>2</td><td>Features of MS-EXCEL</td><td>18</td><td>0</td><td>40</td><td>5</td><td>3</td></tr>
<tr><td>3</td><td>Features of POWERPOINT</td><td>12</td><td>0</td><td>25</td><td>5</td><td>1½</td></tr>
<tr><td>4</td><td>Features of MS-ACCESS</td><td>15</td><td>0</td><td>30</td><td>5</td><td>2</td></tr>
<tr><td></td><td>Total</td><td>60</td><td>0</td><td>120</td><td>20</td><td>8</td></tr>
</table>

Objectives:

On completion of the study of the course the student shall be able to

1.0 Features of Word Processing

1.1. Getting to know the new user interface – File Menu, using Quick Access toolbar, using the Ribbon

1.2. Getting help from ms office

1.3. Features of MS-Word

1.4. Narrate the process of copying, cutting & pasting text within the same file

1.5. Word processor basics, text wrapping, adding or deleting text, selecting blocks of text, copying text, moving text, search & replace, editing a document.

1.6. Character formatting & style, page formatting, margin setting & columns, justification of text, line spacing, setting tabs, automatic tasks, creating letters in readymade format.

1.7. Page setting, Previewing the document & printing the document

1.8. Describe the process of including the headers & footers.

1.9. Explain creation of table.

1.10. Open an existing document, spell check, setting the numbers in the documents.

1.11. Describe mail merge.

1.12. Import & export from & to various formats

1.13. Inserting objects, watermarks, bookmarks, hyperlinks

1.14. Protecting a document

2.0 Features of Excel

2.1. Use of spread sheets

2.2. Inserting cells, rows, columns & worksheets

2.3. Explain changing column width & row height.

2.4. Explain entering, editing using formulae.

2.5. Relative & Absolute addressing

2.6. Working with mathematical functions

2.7. Working with logical functions

2.8. Working with date & time functions

2.9. Working with statistical functions

2.10. Working with text functions

2.11. Excel page setting features

2.12. Sorting the columns

2.13. Explain conditional formatting

2.14. Converting text to columns

2.15. Describe the process of working with multiple worksheets.

2.16. Explain the concept of a function in excel

2.17. Explain function wizard.

2.18. Describe creating & editing charts

2.19. Describe creating & placing graphic objects.

3.0 Features of Power Point Presentation

3.1. List the readymade slide layout schemes available in the software

3.2. Describe creating slides for each of slide layout schemes

3.3. Explain entering & editing text

3.4. Explain inserting picture

3.5. Describe changing the background of the slide

3.6. Describe creating text & picture animating in the slide

3.7. Describe creating slide transition effects.

4.0 Features of MS-Access

4.1. Describe the data types used and their properties

4.2. Creation of a table

4.3. Explain adding, deleting and renaming fields

4.4. Explain the purpose of primary key.

4.5. Explain the process of entering and editing data.

4.6. Explain the process of saving & modifying forms

4.7. Explain creating & editing using queries.

4.8. Explain the process of sorting data

4.9. Hiding a field, setting & deleting criteria.

4.10. Describe displaying data

4.11. Creating forms & reports

4.12. Describe the process of printing reports and forms.

COURSE CONTENTS

1.0 Features of Word – processing

Word basics – formatting text & documents – working with headers, footers & footnotes, tabs – tables & sorting – spelling & grammar checking –inserting links, water marks - mail merge features – importing & exporting – protecting document.

2.0 Features of Excel

Excel basics – rearranging worksheet, formatting features – introduction to function & formulae – sorting – conditional formatting - charts & graphs

3.0 Features of Power Point Presentation

Power point basics – creation of slides – text animation – slide transition features – inserting picture, sound &   background.

4.0 Features of MS-Access

Access Basics – creating simple databases & forms – entering and editing data, finding sorting & displaying data – printing reports.

REFERENCE BOOKS

1. Microsoft office 2007 for dummies   - Wallace wang

Advanced C PROGRAMMING
(Common with Information Technology)

Subject : **Advanced C Programming**
Subject Code : **CM – 206 / IT-206**
Periods per Week : **4**
Periods per Year : **60**

Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	**Practice**			
1	Basics of Pointers	10	02	28	4	2
2	User defined functions	16	06	32	6	2
3	Strings	06	02	16	3	1
4	File management	08	04	28	4	2
5	Preprocessor directives and Dynamic Memory management	06	0	16	3	1
	Total	**46**	**14**	**120**	**20**	**8**

TIME SCHEDULE AND BLUE PRINT

Objectives:

On completion of the study of the subject the student shall be able to

1.0 Understand basics of Pointers

 1.1 Define Pointer

 1.2 Illustrate declaration and initialization of Pointers.

 1.3 Illustrate accessing the address of a variable using & operator

 1.4 Illustrate accessing a value of a variable through pointer

 1.5 Differentiate between address and de-referencing operators.

 1.6 Discuss about pointer arithmetic.

 1.7 Illustrate precedence of address and de-referencing operators.

 1.8 Discuss on pointer comparison and pointer conversion.

 1.9 Illustrate relationship between arrays and pointers.

 1.10 Illustrate accessing array elements using pointers

1.11 Discuss pointer arrays with examples.

1.12 Illustrate use of pointer to structure.

1.13 Illustrate concept of structures containing pointers.

1.14 Explain Self referential structures with examples

2.0 Understand User defined functions

2.1 Define function.

2.2 State the need for user defined functions

2.3 Discuss the advantages of functions

2.4 Discuss the elements of function

2.5 Discuss about return values and their types

2.6 Define a function call

2.7 Define function prototype

2.8 Illustrate function declaration in programs

2.9 Discuss and illustrate functions with no arguments and no return values with sample programs

2.10 Discuss and illustrate functions with arguments with no return values with sample programs

2.11 Discuss and illustrate functions with arguments with return values with sample programs

2.12 Discuss and illustrate functions with no arguments with return values with sample programs

2.13 Illustrate use of pointers as function arguments

2.14 Differentiate call by value and call by reference mechanisms of parameter passing techniques.

2.15 Discuss the scope, visibility and lifetime of variables in functions

2.16 Differentiate Local and Global variables

2.17 Illustrate passing arrays to functions with sample programs.

2.18 Illustrate functions that return multiple values with sample programs.

2.19 Illustrate structure as function arguments and returning of structure variables as function values.

2.20 Define recursion

2.21 Illustrate recursion with sample programs

3.0 Understand Strings

3.1 Define String

3.2 Know about declaration and initialization of a String variable.

3.3 Know about reading of strings from terminal with sample program

3.4 Know about writing strings to screen with sample program

3.5 Explain about various String handling functions with sample programs.

3.6 Explain Arithmetic operations on Characters

4.0 Understand basics of Files management

4.1   Define file

4.2   Know how to declare file pointer to a file

4.3   Illustrate the concept of file opening in various modes

4.4   Illustrate the concept of closing of a file

4.5   Illustrate the concept of Input / Output operations on a file

4.6   Illustrate the concept of random access to files

5.0 Understand Pre-processor directives and Dynamic Memory Management

5.1   State the need of Preprocessor directives

5.2   Explain Preprocessor directives

5.3   Explain macro substitution using #define with an example

5.4   Explain dynamic memory management functions and illustrate with examples to use these functions.

COURSE CONTENTS:

1. **Understand basics of Pointers**

    Pointer - Declaration and Initialization of Pointers- Accessing the address of a variable using & operator- Accessing a value of a variable through pointer - Differentiate address and de-referencing operators - Pointer Arithmetic- precedence of address and de-referencing operators - pointer comparison and pointer conversion -Relationship between Arrays and Pointers - Accessing array elements using pointers- Pointers as Function Arguments   -   Discuss pointer Arrays with examples.

2. **Understand User defined functions**

Function -Need for user defined functions - Advantages of functions - elements of function - Return values and their types - function call - function prototype - Functions with no arguments and no return values - functions with arguments with no return values - functions with arguments with return values - functions with no arguments with return values - functions that return multiple values

Recursion - sample programs on recursion - passing arrays to functions

Scope, visibility and lifetime of variables in functions- Local and External variables - Global variable - passing the global variables as parameters

3. **Understand Strings**

Strings - Declaration and initialization of String variables - Reading of strings from terminal - writing strings to screen - String handling functions with sample programs - Arithmetic operations on Characters

4. **Understand basics of Files management and Preprocessor directives**

File - Declare file pointer to a file - file opening in various modes - Concept of closing of a file - Input / Output operations on a file - Random access to files.

5. **Understand Preprocessor directives and Dynamc Memory Management**

Need of Preprocessor directives - Various Preprocessor directives- Macro substitution using #define - Dynamic memory management functions.

REFERENCE BOOKS

5. Let Us C   -- Yeshwanth Kanetkar   BPB Publications
6. Pointer in C-   - Yeshwanth Kanetkar   BPB Publications
7. Programming in ANSI C   -- E. Balaguruswamy   Tata McGrawHill
8. Programming with C   -- Gottfried   Schaum'outline
9. C The complete Reference   -- Schildt   Tata McGraw Hill

ENGINEERING DRAWING- II

Subject Title   :   **Engineering Drawing- II**

Subject Code   :   *CM–207*

Periods/Week   :   **06**

Periods Per Year   :   **90**

TIME SCHEDULE

S.No	Major Topics	No. of Drawing plates	Periods	Weightage of Marks	Short Answer Questions	Essay type Questions
1	Auxiliary views	01	06	10	1	½
2	Orthographic Projection	03	33	25	1	2
3	Pictorial drawing	03	30	25	1	2
4	Development of surfaces	03	21	20	1	1½
	Total	**10**	**90**	**80**	**04**	**06**

The Course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation

Pre-Requisite: Clear visualization and sound pictorial intelligence

OBJECTIVES
Upon completion of the subject the student shall be able to

1.0 Understand the need of auxiliary views
     1.1   State the need of Auxiliary views for a given engineering drawing.
     1.2   Draw the auxiliary views of a given engineering component
     1.3   Differentiate between auxiliary view and apparent view

Drawing plate No.1: (Having 4 exercises)

2.0 Apply principles of orthographic projection
     2.1   Explain the principles of orthographic projection with simple sketches.
     2.2   Draw the orthographic view of an object from its pictorial drawing.
     2.3   Draw the minimum number of views needed to represent a given object fully.

Drawing Plate No. 2 : (Having 8 to 10 exercises)
Drawing Plate No. 3 : (Having 8 to 10 exercises)
Drawing Plate No. 4 : (Having 8 to 10 exercises)

3.0 Prepare pictorial drawings
     3.1   State the need of pictorial drawings.
     3.2   Differentiate between isometric scale and true scale.

3.3 Prepare Isometric views for the given orthographic drawings.
Drawing plate No 5: (Having 10 to 12 exercises)
Drawing plate No. 6: (Having 10 to 12 exercises)
Drawing plate No. 7: (Having 10 to 12 exercises)

4.0   Interpret Development of surfaces of different solids
11.1   State the need for preparing development drawing.
11.2   Prepare development of simple engineering objects (cubes, prisms, cylinders, cones, pyramid) using parallel line and radial line method.
11.3   Prepare development of surface of engineering components like trays, funnel, 90^0 elbow & rectangular duct.
Drawing plate No. 8: (Having 05 exercises)
Drawing plate No. 9: (Having 05 exercises)
Drawing plate No. 10: (Having 05 exercises)

Competencies and Key competencies to be achieved by the student

S.No	Major topic	Key Competency
1.	Auxiliary views	• Draw the auxiliary views of a given Engineering component • Differentiate between Auxiliary view and apparent view
2.	Orthographic Projection	• Draw the minimum number of views needed to represent a given object fully.
3.	Pictorial drawing	• Differentiate between isometric scale and true scale. • Draw the isometric views of given objects,.
4.	Development of surfaces	• Prepare development of Surface of Engineering components like trays, funnel, 90^0 elbow & rectangular duct.

COURSE CONTENT

NOTE
1. **B.I.S Specification should invariably be followed in all the topics.**
2. **A-3 Size Drawing Sheets are to be used for all Drawing Practice Exercises.**

1.0 Auxiliary views

Need for drawing auxiliary views -Explanation of the basic principles of drawing an auxiliary views explanation of reference plane and auxiliary plane - Partial auxiliary view.

2.0 Orthographic Projections

Meaning of orthographic projection -Using a viewing box and a model – Number of views obtained on the six faces of the box, - Legible sketches of only 3 views for describing object -Concept of front view, top view, and side view sketching these views for a number of engg objects - Explanation of first angle projection. – Positioning of three views in First angle projection - Projection of points as a means of locating the corners of the surfaces of an object – Use of miter line in drawing a third view when other two views are given -Method of representing hidden lines -Selection of minimum number of views to describe an object fully.

3.0 Pictorial Drawings

Brief description of different types of pictorial drawing viz., Isometric, oblique, and perspective and their use - Isometric drawings: Iso axis, angle between them, meaning of visual distortion in dimensions - Need for an isometric scale, difference between Isometric scale, and ordinary scale difference between Isometric view and Isometric projection - Isometric and non-Isometric lines -Isometric drawing of common features like rectangles, circular - shapes, non-isometric lines - Use of box and offset methods

4.0 Development of Surfaces

Need for preparing development of surface with reference to sheet metal work -Concept of true length of a line with reference to its orthographic projection when the line is (i) parallel to the plane of projection (ii) inclined to one principal and parallel to the other -Development of simple solids like cubes, prisms, cylinders, cones, pyramid (sketches only) -Types of development: Parallel line and radial line development -Procedure of drawing development, drawings of trays, funnels, 90^0 elbow pipes and rectangular ducts.

REFERENCE BOOKS

Engineering Graphics by P I Varghese – (McGraw-hill)
Engineering Drawing by Basant Agarwal & C.M Agarwal - (McGraw-hill)
Engineering Drawing by N.D.Bhatt.
T.S.M. & S.S.M on " Technical Drawing" prepared by T.T.T.I., Madras.
SP-46-1998 – Bureau of Indian Standards.

Advanced C Programming Lab

Subject Title : **Advanced C Programming Lab**
Subject Code : **CM – 208 / IT-208**
Periods per Week : **6**
Periods per Year : **90**

LIST OF EXPERIMENTS

1. Exercise on pointer declaration and initialization
2. Exercise on pointer accessing the address of a variable using & operator
3. Exercise on accessing a value of a variable through pointer
4. Exercise on pointer arithmetic
5. Exercise on arrays of pointers
6. Exercise on accessing array elements using pointers
7. Exercise on pointer to structure
8. Exercise on structures containing pointers
9. Exercise on Self referential structures
10. Exercise on functions with no arguments and no return values
11. Exercise on functions with arguments and no return values
12. Exercise on functions with no arguments and with return values
13. Exercise on functions with arguments and with return values
14. Exercise on call by value and call by reference mechanisms of parameter passing techniques.
15. Exercise on Local and Global variables
16. Exercise on passing arrays to functions
17. Exercise on structure as function arguments
18. Exercise on returning of structure variables
19. Exercise on recursion
20. Exercise on declaration and initialization of a String
21. Exercise on reading and writing of strings from console
22. Exercise on string handling functions
23. Exercise on text file creation, reading and writing and closing a file.
24. Exercise on preprocessor directives
25. Exercise on dynamic memory management functions

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Exercise on pointer declaration and initialization	Write a C program for declaring a pointer and initializaing	❖ Know what is pointer ❖ Know how to declare it ❖ Know what is address of a variable ❖ Know the value of a variable
2	Exercise on pointer accessing the address of a variable using & operator	Write a C program for accessing the address of a variable using &	❖ Know what is address of a variable ❖ How it can be stored in pointer ❖ How address of a variable is accessed
3	Exercise on accessing a value of a variable through pointer	Write a C program for accessing a value of variable	❖ Know the & operator ❖ Know the * operator ❖ Know how to access the value of variable
4	Exercise on pointer arithmetic	Write a C program for implementing pointer arithmetic operations	❖ Know what arithmetic operations are allowed on pointer
5	Exercise on arrays of pointer	Write a C program for implementing array of pointers	❖ Know the usage of array of pointers
6	Exercise on accessing array elements using pointers	Write a C program for accessing array of elements using pointers	❖ Know how to access array elements using pointers
7	Exercise on pointer to structure	Write a C program for to implement pointer to structures	❖ Know what is structure ❖ Know the members of structure ❖ Know how to access members of structure using pointer to structure
8	Exercise on structures containing pointers	Write a C program for to implement structures containing pointers	❖ Know what is structure ❖ Know the members of structure ❖ Know how to declare and access structures containing pointers
9	Exercise on Self referential structures	Write a C program for to implement Self referential structures	❖ Know how to declare and access structures containing pointers ❖ Know what is Self referential structures

10	Exercise on functions with no arguments and no return values	Write a C program for to implement functions with no arguments and no return values	❖ Know the importance of function ❖ Know what is function ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know what is void keyword
11	Exercise on functions with arguments and no return values	Write a C program for to implement functions with arguments and no return values	❖ Know the importance of function ❖ Know what is function ❖ Know what are arguments ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know how to pass values to called function ❖ Know what are actual arguments ❖ Know what are formal parameters ❖ Know what is call by value mechanism
12	Exercise on functions with no arguments and with return values	Write a C program for to implement functions with no arguments and no with return values	❖ Know the importance of function ❖ Know what is function ❖ Know what are arguments ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know how to return a value to a calling function
13	Exercise on functions with arguments and with return values	Write a C program for to implement functions with arguments and with return values	❖ Know the importance of function ❖ Know what is function ❖ Know what are arguments ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know how to return a value to a calling function ❖ Know how to pass values to called function ❖ Know what are actual arguments ❖ Know what are formal parameters ❖ Know what is call by value mechanism
14	Exercise on call by value mechanisms of parameter passing techniques.	Write a C program for to implement functions with arguments using call by value mechanism	❖ Know what is function ❖ Know what are arguments ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know how to return a value to a calling function ❖ Know how to pass values to called function ❖ Know what are actual arguments ❖ Know what are formal parameters ❖ Know what is call by value mechanism

15	Exercise on call by reference mechanisms of parameter passing techniques.	Write a C program for to implement functions with arguments using call by reference mechanism	❖ Know what is function ❖ Know what are arguments ❖ Know what is calling function ❖ Know what is called function ❖ Know how to call a function ❖ Know how to declare a function ❖ Know how to return a value to a calling function ❖ Know how to pass values to called function ❖ Know what are actual arguments ❖ Know what are formal parameters ❖ Know what is call by reference mechanism ❖ Know the Differences between call by value and call by reference mechanisms of parameter passing techniques
16	Exercise on Local and Global variables	Write a C program for to implement functions that has local variable and global variables	❖ Know what is local variable ❖ Know what is global variable ❖ Know the importance of global variables ❖ Know the various issues when a variable is declared as global ❖ Know the various issues when a variable is declared as local ❖
17	Exercise on passing arrays to functions	Write a C program for to implement passing arrays to functions	❖ Know how to pass arrays between functions ❖ Know base address of an array
18	Exercise on structure as function arguments	Write a C program for to implement structure as function arguments	❖ Know how to pass structure variable(s) between functions
19	Exercise on returning of structure variables	Write a C program for to implement returning of structure variables	❖ Know returning of structure variables
20	Exercise on recursion	Write a C program for to implement recursion	❖ Know what is recursion ❖ Know the condition how to end recursive loop ❖ Know the backtracking ❖ Know the advantage/disadvantage of recursion over looping
21	Exercise on declaration and initialization of a String	Write a C program to declare string and initializing it	❖ Know what is character ❖ Know what is string ❖ Know how to declare string ❖ Know how to initialize sting

22	Exercise on reading and writing of strings from console	Write a C program to implement reading and writing of strings from console	❖ Know how to read a character ❖ Know how to read a stirng ❖ Know various string reading and wiring functions from console ❖ Know the string.h header file
23	Exercise on string handling functions	Write a C program to implement various string handling functions	❖ Know the string.h header file ❖ Know the various functions available in string.h header file ❖ Know the usage of the above functions
24	Exercise on text file creation, reading and writing and closing a file.	Write a C program to implement text file creation, reading and writing and closing a file.	❖ Know what is file ❖ Know the file pointer ❖ Know the various functions for performing file operations
25	Exercise on preprocessor directives	Write a C program to implement preprocessor directives	❖ Know what is preprocessor directive ❖ Know what is macro substitution
26	Exercise on dynamic memory management functions	Write a C program to use dynamic memory management functions	❖ Know what is dynamic memory ❖ Know how to allocate dynamic memory ❖ Know the alloc.h header file ❖ Know the various functions such as malloc, calloc, realloc, free functions ❖ Know the difference between static and dynamic memory

PHYSICS LAB – II

(Common for all branches)

Subject Title	:	**Physics Lab - II**
Subject Code	:	**CM -209**
Periods per week	:	**03**
Total periods per semester	:	**23**

TIME SCHEDULE

S.No	Name of the Experiment	No. of Periods
1.	Focal length and Focal power of convex lens (Separate & Combination)	03
2.	Simple pendulum	03
3.	Velocity of sound in air – (Resonance method)	03
4.	Surface tension of liquid using traveling microscope	03
5.	Coefficient of Viscosity by capillary method	03
6.	Mapping of magnet lines of force	03
	Revision	03
	Test	02
	Total:	**23**

Objectives:

Upon completion of the course the student shall be able to

1.0   Determine the Focal length and focal power of convex lenses using U-V and graphical method

2.0   Determine the value of acceleration due to gravity using Simple Pendulum and verify with L-T^2 graph.

3.0   Determine the velocity of sound in air at room temperature

4.0   Determine the surface tension of a liquid using travelling microscope

5.0   Determine the viscosity of a liquid using capillary method

6.0   Practice the mapping of magnetic lines of force

Competencies and Key competencies to be achieved by the student

Name of the Experiment (No of Periods)	Competencies	Key competencies
1. Focal length and Focal power of convex lens (Separate & Combination) (03)	• Fix the object distance • Find the Image distance • Calculate the focal length and power of convex lens and combination of convex	• Calculate the focal length and power of convex lens • Draw u-v and $1/u - 1/v$ graph
2. Simple pendulum(03)	• Fix the simple pendulum to the stand • Adjust the length of pendulum • Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph	• Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph
3. Velocity of sound in air –Resonance method (03)	• Arrange the resonance apparatus • Adjust the reservoir level for booming sound • Find the first and second resonating lengths • Calculate velocity of sound	• Adjust the reservoir level • Find the first and second resonating lengths • Calculate velocity of sound • Calculate velocity of sound at 0^0 C
4. Surface tension of liquid using traveling microscope(03)	• Find the least count of vernier on microscope • Focus the microscope to the lower meniscus & bent pin • Read the scale • Calculate height of liquid rise • Calculate the surface tension of water	• Read the scale • Calculate height of liquid rise • Calculate the surface tension of water

5. Coefficient of viscosity by capillary method(03)	• Find the least count of vernier • Fix the capillary tube to aspiratory bottle • Find the mass of collected water • Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water using capillary method	• Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water
6. Mapping of magnet lines of force(03)	• Draw magnetic meridian • Placed the bar magnet in NN and NS directions • Draw magnetic lines of force • Locate the neutral points along equatorial and axial lines	• Draw magnetic lines of force • Locate the neutral points along equatorial and axial lines

PREPARED BY BIFURCATION COMMITTEE

1. Dr M.E. JAYARAJ, HGS, GPW(M) BADANGPET, R.R. DIST

2. Dr V.V.M. JAGANNADHA RAO, HGS, GPT, NARAYANKHED, SANGAREDDY DIST

3. SRI V. DAYAKAR, LECTURER IN PHYSICS, SGM GPT ABDULLAPURMET, R.R. DIST

CHEMISTRY LAB – SEMESTER -II

(Common for all branches)

Subject Title	:	**Chemistry Lab - II**
Subject Code	:	**CM-210**
Periods per week	:	**03**
Total periods per semester :		**23**

TIMESCHEDULE

S.No	Name of the Experiment	No. of Periods
1.	Determination of acidity of water sample	03
2.	Determination of alkalinity of water sample	03
3.	Determination of total hardness of water using Std. EDTA solution	03
4.	Estimation of Chlorides present in water sample	03
5.	Estimation of Dissolved Oxygen (D.O) in water sample	03
6.	Determination of pH using pH meter	03
	Revision	03
	Test	02
	Total:	**23**

PREPARED BY BIFURCATION COMMITTEE

1. Dr . V. RAJANARENDER REDDY , HGS, GIOE, SECUNDERABAD
2. Dr. SRISAILAM L/Chemistry., GPT, PARKAL
3. SMT. L.SEETHA, LECTURER IN CHEMISTRY, SGM GPT ABDULLAPURMET, R.R. DIST

OFFICE AUTOMATION LAB

(Common with Information Technology)

Subject Title : **Office Automation Lab**
Subject Code : **CM-211 / IT - 211**
Periods/Week : **3**
Periods/Semester : **45**

LIST OF EXPERIMENTS

1.0 MS-WORD

1.1. Open MS-word and Identify the components on the screen

1.2. Create a document using MS-word and save it.

1.3. Create a table using MS-Word and save it.

1.4. Apply formulas in table & sort the table

1.5. Convert text into table & table into text.

1.6. Insertion of new rows and columns in the existing table and changing background colour in Table

1.7. Merging and splitting of cells in a Table

1.8. Changing the formatting of font

1.9. Exercise with Headers and Footers, paragraph tool bar

1.10. Insert objects into the document like pictures, shapes, charts, word-art.

1.11. Create mailing letters using mail merge tool of MS-word

1.12. Printing a document , page setting, different views of a document

1.13. Import & export files to & from Word.

2.0 MS-EXCEL

2.1. Open MS-Excel and identify the components on the screen

2.2. Create a Worksheet in MS-Excel and save it in .xls or .xlsx format

2.3. Inserting column and row in Excel

2.4. Creation of new worksheet in the existing Excel Book file

2.5. Generate a Chart using the data in Excel-worksheet

2.6. Automate calculations in a worksheet using formula

2.7. Sort and filter data in a worksheet

2.8. Protecting a worksheet, working with multiple sheets

3.0 MS-POWERPOINT

3.1. Create a simple Power point presentation for a small topic and saving in .ppt or pptx format

3.2. Inserting a new slide in the existing PowerPoint file

3.3. Inserting chart or image in a PowerPoint slide

3.4. Exercise with animation and sound features in PowerPoint

3.5. Exercise with Rehearse Timings feature in PowerPoint

3.6. Exercise in printing the PowerPoint file in (a) Slides (b) Handouts

4.0 MS-ACCESS

4.1. Create a table for given data and save in .mdb or .accdb format

4.2. Add, Delete and rename fields

4.3. Use the Primary key field

4.4. Enter and edit data

4.5. Use Relationships option

4.6. Create forms

4.7. Modify and save forms

4.8. Create and use queries

4.9. Sort data

4.10. Display data

4.11. Create and print reports

OBJECTIVES AND KEY COMPETENCIES

S. No	Name of Experiment	Objectives	Key Competencies
1.	Open MS-Word from (i) Programs (ii) Run and Identify the components on the screen	♦ Able to Open MS-word and Identify the components on the screen	❖ Check whether able to Identify the components on the screen ❖ Check whether able to Identify all components on the screen of MSWORD are identified and learnt thoroughly
2.	Insertion of new rows and columns in the existing table and changing the background colour of the table	♦ Able to Insert new rows and columns in the existing table ♦ Able to Change the background colour of the table	❖ Check whether able to Insert new rows and columns in the existing table ❖ Check whether able to Insert new rows and columns as per requirement ❖ Check whether able to Change the background colour of the table
3.	Merging and splitting of cells in a Table	♦ Able to Merge and split cells in a Table using right click method	❖ Check whether able to Merge and split cells in a Table using right click method
4.	Changing the formatting of font	♦ Able to Change the formatting of font using right click menu ♦ Able to Change the formatting of font using menu options	❖ Check whether able to Change the formatting of font using right click menu ❖ Check whether able to Change the formatting of font using menu options
5.	Exercise with Headers and Footers	♦ Able to change Headers and Footers using menu option ♦ Able to change Headers and Footers by clicking top and bottom document	❖ Check whether Able to change Headers and Footers using menu option ❖ Check whether able to change Headers and Footers by clicking top and bottom document
6.	Create mailing letters using mail merge tool of MS-word	♦ Able to use mail merge tool of MS-word using start mail merge option in mail menu	❖ Check whether Able to use mail merge tool of MS-word in creating letter using mail merge option in mail menu
7.	Open MS-Excel and identify the components on the screen	♦ Able to Open MS-Excel and identify the components on the screen	❖ Check whether Able to Open MS-Excel and identify the components on the screen ❖ Check whether all components are known on screen
8.	Create a Worksheet in MS-Excel and save it in .xls or .xlsx format	♦ Able to Create a Worksheet in MS-Excel ♦ Able to save it in .xls or .xlsx format	❖ Check whether Able to Create a Worksheet in MS-Excel ❖ Check whether Able to save it in .xls or .xlsx format

9.	Inserting column and row in Excel	♣ Able to Insert column and row in Excel using menu options ♣ Able to Insert column and row in Excel by right clicking rows or columns appropriately	❖ Check whether able to Insert column and row in Excel using menu option ❖ Check proper addition rows and columns in given sheet ❖ Check whether able to Insert column and row in Excel by right clicking rows or columns appropriately
10.	Creation of new worksheet in the existing Excel Book file	♣ Able to create worksheet in the existing Excel Book file by using Insert worksheet option besides existing sheets	❖ Verify whether able to create worksheet in the existing Excel Book file by using Insert worksheet option
11.	Generate a Chart using the data in Excel-worksheet	♣ Able to Generate a Chart using the data in Excel-worksheet	❖ Check whether able to Generate a Chart using the data in Excel-worksheet ❖ Verify whether chart prepared is as per the data given
12.	Automate calculations in a worksheet using formula	♣ Able to Automate calculations in a worksheet using fx formula ♣ Able to use sigma function ♣ Able to use function library option in formula menu	❖ Check whether Able to Automate calculations in a worksheet using fx formula ❖ Verify whether Able to use sigma function ❖ Check whether Able to use function library option in formula menu
13.	Sort and filter data in a worksheet	♣ Able to Sort data in a worksheet using sort option in Data menu ♣ Able to Sort data in a worksheet using sort option in right click ♣ Able to filter data in a worksheet in data menu ♣ Able to filter data in a worksheet in right click	❖ Verify whether Able to Sort data in a worksheet using sort option in Data menu ❖ Verify whether Able to Sort data in a worksheet using sort option in right click ❖ Check whether Able to filter data in a worksheet in data menu ❖ Check whether Able to filter data in a worksheet in right click
14.	Inserting a new slide in the existing powerpoint file	♣ Able to Insert a new slide in the existing powerpoint file using newslide option in home menu ♣ Able to Insert a new slide in the existing powerpoint file using slide layout option in home menu	❖ Check whether Able to Insert a new slide in the existing powerpoint file using newslide option in home menu ❖ Check whether Able to Insert a new slide in the existing powerpoint file using slide layout option in home menu
15.	Create a simple Power point presentation for a small topic and saving in .ppt or pptx format	♣ Able to create a simple Power point presentation for a given topic ♣ Able to Save the presentation in both .ppt or pptx format	❖ Check Able to create a simple Power point presentation for a given topic ❖ Check Able to Save the presentation in both .ppt or pptx format
16.	Inserting chart or image in a	♣ Able to Insert chart in a power point slide using Insert menu option	❖ Check Able to Insert chart in a power point slide ❖ Check Able to Insert image in a power

	powerpoint slide	↳ Able to Insert image in a power point slide using insert menu option	point point slide
17.	Exercise with animation and sound features in powerpoint	↳ Able to work with animation and sound features in power point using custom animation option in Animations menu ↳ Able to work with Media clip options in insert menu	❖ Check Able to work with animation and sound features in power point using custom animation option in Animations menu ❖ Check Able to work with Media clip options in insert menu
18.	Exercise with Rehearse Timings feature in powerpoint	↳ Able to work with Rehearse Timings feature in powerpoint using slide show menu rehearse option	❖ Check able to work with rehearse timings features
19.	Exercise in printing the powerpoint file in (a) Slides (b) Handout	↳ Able to print the powerpoint file in Slides using File menu Print option ↳ Able to print the powerpoint file in ↳ Handout using file menu print option	❖ Check to print the powerpoint file in Slides using File menu Print option ❖ Check to print the powerpoint file in Handout using file menu print option
20.	Create a table for given data and save in .mdb or .accdb format	↳ Able to Create a table for given data using table option in create menu ↳ Using table template from create menu ↳ Using table design option from create menu ↳ Able to save given table in .mdb or .accdb format	❖ Check Able to Create a table for given data using table option ❖ Check Able to Create a table for given data using table template option ❖ Check Able to Create a table for given data using table design option ❖ Check Able to save given table in .mdb or .accdb format
21.	Exercise on Add, Delete and rename fields	↳ Able to Add, Delete and rename fields using design menu	❖ Check able to Add, Delete and rename fields
22.	Use the Primary key field	↳ Able to use primary key in table design view ↳ Able to use primary key option from design menu	❖ Check for usage of primary key ❖ Check for usage of primary key option from design menu
23.	Enter and edit data	↳ Able to Enter and edit data	❖ Check to Enter and edit data correctly
24.	Use Relationships option	↳ Use Relationships option from database tools menu	❖ Check able Use Relationships option from database tools menu ❖ Check whether relationships properly made on given tables
25.	Create forms	↳ Able to create forms using form option in create menu ↳ Able to create forms using form design option in create menu	❖ Check Able to create forms using form option in create menu ❖ Check Able to create forms using form design option in create menu

		↓ Able to create forms using more form option in create menu	❖ Check Able to create forms using more form option in create menu
26.	Modify and save forms	↓ Able to Modify and save forms	❖ Check Able to Modify and save forms
27.	Create and use queries	↓ Able to Create and use queries from create menu query wizard option ↓ Able to Create and use queries from create menu query design option	❖ Check Able to Create and use queries from create menu query wizard option ❖ Check Able to Create and use queries from create menu query design option
28.	Create and print reports	↓ Able to Create and print reports	❖ Check able to Create and print reports

III SEMESTER

ENGINEERING MATHEMATICS – III
(Common to all Branches)

Subject Title	:	**Engineering Mathematics-III**
Subject Code	:	**M- 301**
Periods per week	:	**04**
PeriodsperSemester	:	**60**

Blue print

S. No	Major Topic	No of Periods	Weightage of Marks	Short Type			Essay Type		
	Unit - I			R	U	App	R	U	App
1	**Indefinite Integration**	18	32	2	2	0	1	1	0
	Unit - II								
2	**Definite Integration and its applications**	17	31	0	1	1	1/2	1	1
	Unit - III								
3	**Numerical Integration**	05	10	0	0	0	0	0	1
	Unit - IV								
4	**Differential Equations of first order**	20	37	2	2	0	1/2	1	1
	Total	60	110	4	5	1	2	3	3
			Marks:	12	15	3	20	30	30

R: **Remembering type**   32 marks
U: **Understanding type**   45 marks
App: **Application type**   33 marks

OBJECTIVES
Upon completion of the subject the student shall be able to
Unit-I

1.0   Use IndefiniteIntegration to solve engineering problems
   1.1   Explain the concept of Indefinite integral as an anti-derivative.
   1.2   State the indefinite integral of standard functions and properties of Integrals $\int (u + v)\, dx$ and $\int ku\, dx$ where k is constant and u, v are functions of x.
   1.3   Solve integration problems involving standard functions using the above rules.
   1.4   Evaluate integrals involving simple functions of the following type by the method of substitution.
        i) $\int f(ax + b)\, dx$ where $f(x)\, dx$ is in standard form.

    ii) $\int [f(x)]^n \ f'(x) \ dx$

    iii) $\int f'(x)/[f(x)] \ dx$

    iv) $\int f\{g(x)\} \ g'(x) \ dx$

1.5   Find the Integrals of *tan x, cot x, sec x* and *cosec x* using the above.

1.6   Evaluate the integrals of the form $\int Sin^m\theta Cos^n\theta. \ d\theta$ where m and n are positive integers.

1.7   Evaluate integrals of powers of *tan x* and *sec x*.

1.8   Evaluate the Standard Integrals of the functions of the type

$$i) \ \frac{1}{a^2 + x^2}, \frac{1}{a^2 - x^2}, \frac{1}{x^2 - a^2}$$

$$ii) \ \frac{1}{\sqrt{a^2 + x^2}}, \frac{1}{\sqrt{a^2 - x^2}}, \frac{1}{\sqrt{x^2 - a^2}}$$

$$iii) \ \sqrt{x^2 - a^2}, \sqrt{x^2 + a^2}, \sqrt{a^2 - x^2}$$

1.9   Evaluate the integrals of the type

$$\int \frac{1}{a \pm bSin\theta} d\theta, \int \frac{1}{a \pm b\cos\theta} d\theta \ \text{and} \ \int \frac{1}{a\cos\theta \pm b\sin\theta \pm c} d\theta \ .$$

1.10   Evaluate integrals using decomposition method.

1.11   Evaluate integrals using integration by parts with examples.

1.12   State the Bernoulli's rule for evaluating the integrals of the form $\int u.v dx$.

1.13   Evaluate the integrals of the form $\int e^x [f(x) + f'(x)] \ dx.$

Unit-II
2.0   Understand definite integral and use it in engineering applications

2.1   State the fundamental theorem of integral calculus

2.2   Explain the concept of definite integral.

2.3   Calculate the definite integral over an interval.

2.4   State various properties of definite integrals.

2.5   Evaluate simple problems on definite integrals using the above properties.

2.6   Explain definite integral as a limit of sum by considering an area.

2.7   Find the areas under plane curves and area enclosed between two curves using integration.

2.8   Obtain the volumes of solids of revolution.

2.9   Obtain the mean value and root mean square value of the functions in any given interval.

Unit –III
3.0 Understand Numerical Methods

3.1   Explain the Trapezoidal rule, Simpson's 1/3 rules for approximation of integrals and provide some examples.

Unit –IV
4.0   Solve Differential Equations in engineering problems.

4.1   Define a Differential equation, its order, degree

4.2   Form a differential equation by eliminating arbitrary constants.

4.3   Solve the first order first degree differential equations by the following methods:

        i.   Variables Separable.

        ii.   Homogeneous Equations.

        iii.   Exact Differential Equations

iv.   Linear differential equation of the form dy/dx + Py = Q,
            where P and Q are functions of x or constants.

iv.   Bernoulli's Equation (Reducible to linear form.)

4.4   Solve simple problems leading to engineering applications

COURSE CONTENT
Unit-I
Indefinite Integration:

1**.** Integration regarded as anti-derivative – Indefinite integral of standard functions.   Properties of indefinite integral. Integration by substitution or change of variable. Integrals of the form $\sin^m\theta.\cos^n\theta.$ where m and n are positive integers. Integrals of tan x, cot x, sec x, cosec x and   powers of tan x, sec x by substitution.

Evaluation of integrals which are reducible to the following forms :

$$i)\frac{1}{a^2+x^2},\frac{1}{a^2-x^2},\frac{1}{x^2-a^2}$$
$$ii)\frac{1}{\sqrt{a^2+x^2}},\frac{1}{\sqrt{a^2-x^2}},\frac{1}{\sqrt{x^2-a^2}}$$
$$iii)\sqrt{x^2-a^2},\sqrt{x^2+a^2},\sqrt{a^2-x^2}$$

Integration by decomposition of the integrand into simple rational, algebric functions. Integration by parts , Bernoulli's rule.

Unit-II
Definite Integral and its applications:

2. Definite integral-fundamental theorem of integral calculus, properties of definite integrals, evaluation of simple definite integrals. Definite integral as the limit of a sum. Area under plane   curves – Area enclosed between two curves. Volumes of solids of revolution.Mean and RMS   values of a function on a given interval.

Unit-III
Numerical Integration :

3   Trapezoidal rule, Simpson's 1/3 rule to evaluate an approximate value of a definite integral.

Unit –IV
Differential Equations:

4. Definition of a differential equation-order and degree of a differential equation- formation of differential equations-solution of differential equation of first order, first degree: variable-separable, homogeneous, exact, linear differential equation, Bernoulli's equation.

Reference Books:
1.   Integral Calculus Vol.I, by M.Pillai and Shanti Narayan
2.   Thomas' Calculus, Pearson Addison –Wesley Publishers

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Subject Title   : **Basic Electrical & Electrical Engineering**
Subject Code   : **CM – 302**
Periods per Week   : **05**
Periods per Semester : **75**

TIME SCHEDULE

Sl. No.	Major Topics	Periods	Weightage of marks	Short Type	Essay Type
1	Basic Concepts, Ohms law	10	16	2	1
2	Resistance in series, parallel	10	10	0	1
3	Kirchhoff's Laws	10	16	1	1
4	Work, power & Energy	5	10	0	1
5	Electromagnetic Induction	10	16	2	1
6	AC Fundamentals	10	16	2	1
7	Semiconducting devices	10	16	2	1
8	Stabilizers and UPS	10	13	1	1
	Total	**75**	**110**	**10**	**08**

OBJECTIVES

On completion of the study of this subject a student shall be able to

1.0   Understand the Basic concepts and ohms law

1.1   Define Electric charge, current, potential difference

1.2   State ohm's Law and limitations of ohms Law

1.3   Define Resistance and laws of Resistance

1.4   Define the terms specific Resistance and conductance

1.5   Effect of temperature on Resistance

1.6   Derive the formula for resistance at any temperature

1.7   Define temperature coefficient of Resistance

1.8   Derive the formula for temperature coefficient of Resistance at any temperature

1.9   Solve simple problems on specific Resistance

1.10   Solve simple problems on temperature coefficient of Resistance

2.0   Understand Resistance connected in series and parallel

2.1   Resistance in series DC circuits with 3 resistors and DC source and specify relationship between applied voltage & currents through resistors

2.2   Resistance in parallel DC circuits with 3 resistors and DC source and specify relationship between applied voltage & currents through resistors

2.3   Resistance in series and parallel and find equivalent resistance

2.4   Derive the formula for current in parallel circuits with 2 resistors

2.5   Write formula for star to Delta transformation

2.6.   Write formula for Delta to star transformation

2.7.   Solve simple problems on Resistance connected in series and parallel

3.0   Understand Kirchhoff's Laws

3.1   Define the active circuit passive circuit

3.2   Define active elements and passive elements

3.3   Define junction, branch and loop

3.4   State and Explain Kirchhoff's current Law

3.5   State and Explain Kirchhoff's voltage Law

3.6   Solve simple problems on KVL and KVL for two loop circuits

4.0   Understand Work Power Energy

4.1   Define Electrical work done and write it's units

4.2   Define Electrical power and write units

4.3   Define Electrical Energy and write it's units

4.4   Solve simple problem on Electrical Power

4.5   Solve simple problems on Energy i.e Electrical bill calculations

5.0   Understand Electromagnetic Induction.

5.1   State Faraday's law of Electromagnetic Induction

5.2   Classify induced emf

5.3   Define dynamically induced emf, Mutual induced emf

5.4   Define self-inductance and mutual inductance.

5.5   Define coefficient of coupling and write formula

5.6   State Lenz's law

5.7   State Fleming's right hand rule and left hand rule

5.8   Derive the formula for energy stored in a magnetic field

5.9   Solve simple problems on Faraday's law and dynamically induced emf

.

6.0.   UNDERSTAND AC FUNDAMENTALS

6.1.   Define the terms (a) Cycle (b) Time period (c) frequency.

6.2.   Define (a) Peak value (b) Average value (c) R.M.S value.

6.3.   Define (a) Phase (b) Phase difference

6.4.   Define (a) form factor (b) peak factor

6.5.   Derive formula for Average value of Sinusoidal wave

6.6.   Derive formula for RMS value for Sinusoidal value

6.7   Solve simple problems on average and RMS value of Sinusoidal wave

7.0   Understand Semiconductor

7.1.   Classify conductor semiconductor and insulator based on valance electrons

7.2.   Classify semiconductors

7.3.   Distinguish intrinsic and extrinsic semiconductors

7.4.   Distinguish P- type and N- Type semiconductors

7.5.   Working principle of PN junction Diode

7.6.   Write application of PN junction Diode and Zener diode.

7.7.   Types of Transistors and working principle of Transistors

7.8.   Write applications of Transistors

8.0   Understand stabilizer and UPS

8.1.   Necessity of stabilizer and types of stabilizers

8.2.   Working principle of stabilizer with block diagram

8.3.   Rating of stabilizers

8.4.   Necessity of UPS and types of ups

8.5.   Working principle of online UPS with block diagram

8.6.   Working principle of off line UPS with block diagram

COURSE CONTENTS:

1. OHMS LAW: Electric charge, current, potential difference- ohm's Law and limitations Define- Resistance and laws of Resistance - specific Resistance and conductance –Effect of temperature on Resistance-Temperature coefficient of Resistance

2. RESISTANCE IN SERIES & PARALLEL: Resistance in series DC circuits -Resistance in parallel DC circuits -Resistance in series and parallel and its equivalent resistance – Division of current in parallel circuits - Star to Delta transformation - Delta to star transformation   (no derivation)

3. KIRCHOFF LAWS : Active elements and passive elements - Active circuit & Passive circuit - junction, branch and loop- Kirchhoff's current Law - State and Explain Kirchhoff's voltage Law .

4. WORK POWER& ENEERGY: Electrical work done - Electrical power -Electrical Energy

5. ELECTRO MEGNETIC INDUCTION : Faradays law of Electromagnetic Induction - Dynamically induced emf - Mutual induced emf - Self-inductance and Mutual inductance- Coefficient of coupling - Lenz's law -State Fleming's right hand rule and left hand rule - Energy stored in a magnetic field .

6. AC FUNDAMENTALS: Basic terms : Cycle ,Time period & frequency -Peak value ,Average value & R.M.S value- Phase & Phase difference - Form factor & peak factor- Average value of Sinusoidal wave- RMS value for Sinusoidal wave

7. SEMICONDUCTING DEVICES : Conductor semiconductor and insulator - Intrinsic and extrinsic semiconductors - P type and N type semiconductors - PN junction Diode – Transistors- NPN & PNP Transistor

8. STABILIZER AND UPS: Stabilizer -Types of stabilizers - Working principle of stabilizer- Rating of stabilizers - UPS and types of UPS - Online UPS -Off line UPS.

Reference books

1. Basic Electricity vol. 1 – vol. 5 by ME Van Valkenburgh
2. Basic Electrical Technology by VK Mehta.
3. Basics Of Electrical Engineering By V.U.Bakshi U.A. Bakshi
4. Basic Electrical and Electronics Engineering, 1e By D P Kothari; I J Nagrath
5. A Textbook of Electrical Tech. Vol. 1 Basic Electrical Engineering BL. THERAJA
6. PRINCIPLES OF ELECTRONICS by V.K. MEHTA and ROHIT MEHTA

DIGITAL ELECTRONICS

Subject Title : Digital Electronics

Subject Code : CM – 303

Periods per Week : 04

Periods per Semester : 60

Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	Practice			
1	Logic Gates & Boolean Algebra	10	4	29	3	2
2	Logic Families and Flip-Flops	10	5	29	3	2
3	Counters	10	3	18	1	1½
4	Registers and Memories	08	3	26	2	2
5	Combinational circuits	05	2	8	1	½
	Total	**43**	**17**	**110**	**10**	**8**

TIME SCHEDULE AND BLUE PRINT

OBJECTIVES

On completion of the study of the subject the student shall be able to

1.0 Comprehend Boolean algebra and working of different logic gates.

    1.1   Define AND, OR, NOT operators with truth tables.

    1.2   Explain the working of EX-OR and EX-NOR gates with truth tables.

    1.3   Explain the working of NAND and NOR gates using truth tables.

    1.4   Explain realization of AND, OR, NOT, EX-OR gates using NAND gates only, NOR gates only.

    1.5   State the different postulates in Boolean algebra.

    1.6   State De-Morgan's theorems.

1.7   Apply De-Morgan's theorems and other postulates of Boolean algebra to simplify the given Boolean expression.

1.8   Write Boolean expression for the given truth table.

1.9   Use K – map to simplify Boolean expression (up to 4 variables).

1.10 Comprehend the working of arithmetic circuit.

1.11 Describe the function of Half Adder.

1.12 Draw Half-Adder circuit using an exclusive OR and an AND gate.

1.13 Explain the process of constituting a Full-Adder using two Half-Adders and an OR gate.

1.14 Explain the realization of Half–Adder using only NAND gates or only NOR gates.

1.15 Draw a 4-bit parallel adder using full adders.

1.16 Explain the working of the above circuit.

1.17 Draw a 4-bit parallel adder/ 2's complement subtractor circuit.

1.18 Explain the working of the above circuit.

1.19 Explain the working of a serial adder with a block diagram.

1.20 List advantages and disadvantages of a serial adder over parallel adder.

1.21 Explain the operation of a digital comparator circuit for two 4-bit words.

2.0 Comprehend Logic Families and Flip Flops

2.1   Know the details of different logic families**.**

2.2   Define positive and negative logic levels.

2.3   State the basic principle of operation of a Flip-flop.

2.4   Explain the working of a NAND/NOR gate latch.

2.5   Explain with block diagram, waveforms and truth tables the working of
        RS, RST, T, D and JK Flip-flop.

2.6   Explain the concept of edge and level triggering flip-flops.

2.7   Distinguish between synchronous and asynchronous inputs of a flip-flop and state their functions.

2.8   State the need for a Master-Slave flip-flop.

2.9   Explain the working of a Master-Slave flip-flop using suitable diagram and truth table.

3.0   Comprehend the function of counters and their working.

3.1   Distinguish between asynchronous and synchronous counters.

3.2   Draw and explain module-8 ripple counter and decade counter.

3.3   Explain the counting sequence with waveforms and truth tables in the above circuit.

3.4   Explain draw backs of ripple counter.

3.5   Draw and explain a 4-bit synchronous counter operation

3.6   Explain the operation of an up/down counter using flip flops.

3.7   State the need for a programmable counter using flip flops.

3.8   Explain the operation of a programmable counter using flip flops.

3.9   Draw and explain the operation of a 4-bit ring counter.

3.10 List the applications of counter.

4.0   Comprehend the function Registers and their working and memories

4.1   State the need for a Register

4.2   Draw and explain the working of 4-bit shift left and shift right registers

4.3   Explain the transfer of data between register.

4.4   Explain the working of serial in – serial out , serial in – parallel out register and parallel in - parallel out, parallel in-serial out registers

4.5   Explain the working of Universal shift register (74194)

4.6   Explain the use of shift register as memory.

4.7   Classify various types of memories based on the principle of operation, physical characteristics, accessing modes and fabrication technology.

4.8   Differentiate between ROM and RAM

4.9   Distinguish between EEPROM and UVPROM

4.10 Compare static RAM and dynamic RAM

5.0   Understand the combinational circuits

5.1   Draw and explain the operation of 4 X 1 Multiplexer.

5.2   Draw and explain the operation of 1 to 4 Demultiplexer.

5.3   Draw and explain the operation of a 4 to 10 line decoder.

5.4   Draw and explain Decimal to BCD encoder.

5.5   List the applications of multiplexers and demultiplexer.

5.6   List the applications of Encoders and decoders.

COURSE CONTENTS

1. Logical Gates and Boolean algebra : AND, OR, NAND, NOT, NOR & EX-OR gates. Logical definitions – Symbols – truth tables. Boolean theorems, Simplification of Boolean expressions, Using De-Morgan's theorems, Formation and implementation of Logic expressions, Karnaugh's mapping, Applications involving developing of combinational logic circuits. Half-Adder, Full-adder, Subtractor, Serial – Parallel Binary adder – Parallel adder/subtractor circuits.

2. FLIP FLOP: Different logic families, Basic principles of Flip Flop operation (with help of wave form & truth tables) of RS,T,D,JK and Master Slave JK flip flop, concept of Edge Triggering and Level Triggering , Synchronous and Asynchronous devices.

3. Counters: Basic Asynchronous, Synchronous Binary counter, Decade counter, Ripple counter, Up and Down counters, Ring counter, applications of counters.

4. Registers and Memories : Shift registers, Serial, Parallel register, Serial-in Parallel out, Parallel-in–serial out registers, Universal shift registers, Applications, Shift register as memory – Classification of memories - Differentiate between ROM and RAM - Distinguish between EEPROM and UVPROM - Compare static RAM and dynamic RAM

5. Combinational Circuits: Multiplexers, Demultiplexers, Encoders, Decoders - applications

REFERENCE BOOKS

1. Digital principles and applications --   Malvino and Leach
2. Digital Electronics   --   Bignell   - Thomson
3. Modern Digital Electronics   --   R.P. Jain

COMPUTER ORGANIZATION

Subject Title   : Computer Organization

Subject Code   : CM – 304

Periods per Week   : 04

Periods per Semester : 60

TIME SCHEDULE AND BLUE PRINT						
Unit No	**Major Topic**	**No of Periods**		**Weightage of marks**	**Short Type**	**Essay Type**
		Theory	**Practice**			
1	CPU Organization	11	2	18	1	1½
2	Information representation , Arithmetic Operations	11	4	37	4	2½
3	Memory Organization	10	2	18	1	1½
4	I/O Organization	12	2	29	3	2
5	Pipeline and Vector processing	06	0	8	1	½
	Total	**50**	**10**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the subject the student shall be able to

1.0 Understand the Processor Organization

1.1 Draw the functional block diagram of Digital computer and explain the function of each unit.

1.2 Draw the block diagram of simple accumulator based CPU.

1.3 Explain the function of each unit.

1.4 Define the terms micro operation, macro operation, instruction cycle, fetch cycle and execution cycle.

1.5 Define stored program concept.

1.6 Describe the sequential execution of a program stored in memory by the CPU

2.0 Comprehend the process of Information representation and Arithmetic Operation

2.1   Explain the basic types of information representation in a computer.

2.2   Define floating point representation and fixed point representation of numbers.

2.3   Illustrate the same with example.

2.4   Distinguish between Fixed point and Floating point representations.

2.5   Define Operand, Opcode and address.

2.6   Explain zero address, one address, two address and three address instructions with simple examples.

2.7   Explain addressing modes.

2.8   Explain the fixed point addition and subtraction operations with flowcharts.

2.9   Explain the Fixed point multiplication and division operations with flowcharts.

2.10 Explain floating point addition, subtraction operations with flowcharts

2.11 Explain floating point multiplication and division operations with flowcharts.

3.0 Appreciate organization of Computer Memory system.

3.1   Distinguish between main and auxiliary memory.

3.2   Explain the need for memory hierarchy in a computer.

3.3   State the significance of various memory device characteristics: access time, access rate, alterability, permanence of storage, cycle time.

3.4   Explain Associative Memory

3.5   Explain the principle of virtual memory organization in a computer system

3.6   Explain virtual address and physical address organization.

3.7   Explain the principle and advantage of cache memory organization.

3.8   Explain the principle of memory interleaving in a computer.

4.0 Understand the input and output organization of a computer.

4.1   List any five peripheral devices that can be connected to a computer.

4.2   Explain the need for an interface.

4.3   List out three modes of data transfer.

4.4   Explain synchronous and asynchronous data transfer.

4.5   Explain hand shaking procedure of data transfer.

4.6   Explain programmed I/O method of data transfer.

4.7   Explain interrupted initiated I/O.

4.8   Explain DMA controlled transfer.

4.9   Explain priority interrupt, polling, and daisy chaining priority.

4.10   Explain about bus system.

4.11   List four bus systems.

5.0 Understand Pipeline and Vector Processing

5.1   Explain the principle of Parallel processing.

5.2   Describe Flynn's classification of Parallel processing.

5.3   Explain the principle of pipeline processing.

5.4   List advantages of parallel processing and pipeline processing.

5.5   Explain arithmetic instruction pipeline.

5.6   Explain vector processing and array processor.

Course Content

Processor Organization - Functional block diagram of Digital computer - Simple accumulator based CPU and function of each unit - Stored program concept

Information representation and Arithmetic Operation- Basic types of information representation - floating point representation and fixed point representation of numbers, Operand, Opcode and address - zero address, one address, two address and three address instructions - Addressing modes -fixed point addition and subtraction, multiplication and division operations with flowcharts - floating point addition, subtraction, multiplication and division operations with flowcharts.

Organization of Computer Memory system - Main and auxiliary memory - Need for memory hierarchy in a computer -Significance of various memory devices characteristics: access time, access rate, alterability , permanence of storage, cycle time - Associative Memory - Virtual memory organization in a computer system - Virtual address and physical address organization - Principle and advantage of cache memory organization- Principle of memory interleaving in a computer

Input and output organization - Peripheral devices - Need for an interface - Three modes of date transfer - Synchronous and asynchronous data transfer -Hand shaking procedure of data transfer - Programmed I/O method of data transfer - Interrupted initiated I/O - DMA controlled transfer - Priority interrupt, polling, and daisy chaining priority - Bus systems

Pipeline and Vector Processing - Principle of Parallel processing - Flynn's classification of Parallel processing - Principle of pipeline processing - Advantages of parallel processing and pipeline processing -Arithmetic instruction pipeline -Vector processing and array processor

Reference Books

1. Structured Computer Organization   --   Andrew S Tenenbaum.

2. Computer Organization   --   Govindarajulu (TMH).

3. Computer Organization & Architecture   --   William Stallings

4. Computer System Architecture   --   Morris Mano

RDBMS

Subject Title	: RDBMS
Subject Code	: CM - 305
Periods per week	: 05
Periods per Semester	: 75

TIME SCHEDULE AND BLUE PRINT						
Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	Practice			
1	Concept of DBMS & RDBMS	14	2	29	3	2
2.	Concept of SQL	14	2	24	3	1½
3.	Management of schema, Objects	13	2	18	1	1½
4.	PL/SQL	15	2	23	1	2
5.	Advanced PL/SQL	09	2	16	2	1
	Total	**65**	**10**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the subject the student shall be able to

1.0   Understand the concept of DBMS & RDBMS

1.1   Define Database System

1.2   List advantages of Database System

1.3   Explain Data base abstraction

1.4   Explain Data models

1.5   Define instances and schemes

1.6   Explain data independence.

1.7   Explain data definition language

1.8   Explain data manipulation languages

1.9   Explain data base manager

1.10   Explain data base administrator and users

1.11   Describe the overall system structure

1.12   Explain entity and entity sets

1.13   Explain relationship and relationship sets

1.14   Define the terms super key , candidate key and primary key

1.15   Explain mapping constraints

1.16   Reduce the ER diagrams to tables

1.17   Explain generalization, specialization and aggregation

1.18   Explain Functional Dependencies

1.19   Describe Normalization– 1st NF, 2nd NF, 3rd NF

1.20   Explain E.F.CODD's rules for RDBMS

2.0   Understand the concept of SQL

2.1   Explain benefits of SQL

2.2   Describe about embedded SQL, Lexical conventions, oracle tools support for SQL

2.3   Describe Naming of the Objects and parts and how to refer them

2.4   Explain referring of the object in remote data bases

2.5   Explain literals, text and integers

2.6   Explain the different data types like character, number long, date, raw and long raw etc.

2.7   Illustrate pseudo-columns

2.8   Illustrate the comments within SQL Statement

2.9   List and explain the functions like single row, character, conversion and group functions

2.10   Explain date and number format models

2.11   Describe commands of SQL like data definition language commands, data manipulation language commands, transaction control commands.

2.12   Explain Sub queries

2.13   Explain Joins and types of Joins

3.0   Understand the management of schema objects

3.1   List schema objects

3.2   Explain the guidelines for managing schema objects

3.3   Explain the management of space usage of data base table etc

3.4   Explain the procedure of creating, altering and dropping tables

3.5   Explain the management of sequences like creating altering ,dropping etc

3.6   Explain the various synonyms management like creating, dropping etc

3.7   Describe steps of managing indexes

3.8   Define clusters

3.9   List two types of clusters

3.10   State the purpose of clusters

3.11   Define view

3.12   Explain types of views

3.13   Illustrate creation of views from multiple tables

3.14   List advantages of views.

3.15   Explain management of integrity constraints like Primary key, Foreign key, Unique key, check constraint and illustrate

4.0   Understand PL/SQL

4.1   Explain the architecture of PL/SQL.

4.2   List features of PL/SQL

4.3   Explain data types

4.4   Illustrate declarations and naming conventions of variables

4.5   List built in functions in PL/SQL.

4.6   Explain PL/SQL tables and user defined records.

4.7   Explain decision making statements and illustrate

4.8   Explain looping statements and illustrate

4.9   Define the term Exception handling

4.10   Illustrate five built in Exceptions

4.11   Illustrate User defined Exceptions

4.12   List advantages of Exception handling

4.13   Explain advantages and features of Exceptions.

4.14   Explain the propagation and re-raising of Exceptions.

4.15   Describe the advantages of sub programs.

4.16   List and explain the various statements and declarations for procedures and functions.

4.17   Explain three parameter modes in PL/SQL with examples

4.18   Illustrate parameter default values in PL/SQL procedures and functions

4.19   Explain PL/SQL global, local and system variables.

4.20   Define recursion

4.21   Explain recursion with an example

5.0 Understand Advanced PL/SQL.

5.1   Explain cursor attributes and cursor management

5.2   Explain database triggers

5.3   Explain the concept of stored sub programs with examples

5.4   List advantages of packages.

5.5   Explain the specifications of packaging.

5.6   Explain overloading and calling packaged sub programs.

COURSE CONTENTS

Concept of DBMS

Define Database – Advantage of Database- Data Abstraction – Data Models – Instances and schemes – Data independence – Data Definition Language- Data manipulation Language – Data base manager – Data base Administrator - Database users – Overall system structure.

Entity and entity sets – Relationships and Relationship sets – mapping constraints – Entity Relationship(ER) Diagram – Super key , candidate key and primary key - Reducing E- R Diagrams to tables – Generalization and specialization – Aggregation – Functional Dependencies - Normal forms 1st , 2nd , 3rd- EFCODD rules for RDBMS

Concept of SQL

Benefits of SQL – Embedded SQL – Lexical conversions – ORACLE tools support for SQL - Naming object and parts – Referring objects and parts – Referring to object in remote databases - Literals – Text – Integer – Number – Data types – Character data types – Number data type – Long data type – Data type Raw and long raw data types – Nulls –Pseudo columns – comments within SQL statements – comments on schema objects.

Operators – Unary and Binary operators – Precedence - Arithmetic operators – character operators – comparison operators – logical operators- set operators – other operators – functions – single row functions – number functions – character functions – row functions – number values – data functions – conversion functions – other functions - date format models - SQL commands, data definition language commands - data manipulation language commands - Transaction control commands -Subqueries - Joins.

3. Schema objects

Guidelines for Managing schema objects – managing the space usage of data blocks – setting storage parameters – understanding space use of datatypes – managing tables – creating tables – alter tables – dropping tables – managing sequences – creating sequence – altering sequences- initialization parameters affecting – sequences – dropping sequences – managing synonyms – creating synonyms – dropping synonyms – managing indexes – guidelines for managing indexes – calculating space for indexes – creating indexes – indexed tables, and cluster indexes – guidelines for managing clusters, calculating space required by clusters – creating clusters, clustered tables, and cluster indexes – Altering clusters– Dropping clusters, – managing hash cluster and clustered tables - miscellaneous management for schema objects – creating views – renaming schema objects var type, tables, indexes and clusters – truncating tables and clusters – managing integrity constraints.

4. Elements of PL/SQL

Main features – Architecture – advantages of PL/SQL – fundamentals – character set – Lexical units – Data types – data type conversion – declarations – naming conventions – scope and visibility – assignments – expressions and comparisons – built – in functions – PL/SQL tables – user defined records.
Conditional control IF statement – sequential control GOTO and NULL statements.
SQL support – national language support – Remote Access
Advantages of exceptions – predefined exceptions – user defined exceptions – how exceptions propagate – raising an exception – useful techniques.
Advantages of subprograms – procedures – Functions RETURN statement – forward declarations – actual versus formal parameters – positional and named notation parameter modes – parameter default values – overloading recursion

5.Advanced PL/SQL

Advantages of Stored programs – CURSORS - Advantages of Database Triggers -
Advantages of packages – the package specification – the package body – overloading
– calling packaged subprograms – package state and dependency – package standard.

REFERENCE BOOKS

1. Understanding ORACLE   -- James T. Peary & Joseph G. Laseer.

2. RDBMS with ORACLE   -- Rolland.

3. ORACLE series books of ORACLE Press   – TMH.

4. Starting out with Oracle – Covering Databases -- John Day & CraigVan

5.SQL for Dummies   -- Allen G Taylor

6.PL/SQL, Developer Tools & DBA   ---   Slyke, Dreamtech

7. Relational Database Management Systems   ----ISRD Group, TMH

OOPS THROUGH C++

Subject Title   : OOPS through C++

Subject Code   : CM- 306

Periods per Week   : 04

Periods per Semester : 60

TIME SCHEDULE AND BLUEPRINT

S. No.	Major Topic	No. of Periods		Weightage of Marks	Short Type	Essay Type
		Theory	Practice			
1	OOPS Methodology, Introduction to C++	15	2	29	3	2
2	Constructors, Destructors and Operator Overloading	13	2	26	2	2
3	Classes and Inheritance	10	2	26	2	2
4	C++ I/O	06	2	13	1	1
5	Templates	06	2	16	2	1
	TOTAL	**50**	**10**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the course the student shall be able to:

1.   Understand the concept of OOP methodology.

1.1   Appreciate the evolution of OOP.

1.2   State the principle of object oriented language.

1.3   Explain OOP's properties like encapsulation, polymorphism.

1.4   Create, compile, link and execute a C++ program.

1.5   Differentiate C, C++.

1.6   Write the structure of C++ program.

1.7   Explain C++ I/O operation with examples.

1.8   Write comment statements in C++.

1.9   List out keywords of C++ other than C.

1.10   Explain the operation of dynamic memory allocation using new and delete operators.

1.11   Explain the concept of Default Arguments

1.12   Explain the concept of function overloading.

1.13   Explain inline function and write its advantages.

1.14   Explain friend function and its use.

1.15   Declare and use references

1.16   Define a class & object in C++.

1.17   Declare, define, and use class.

1.18   Compare classes with structures.

1.19   Create objects.

1.20   Declare and access array of objects.

1.21   Explain the concept of passing objects to functions.

1.22   Explain the concept of returning objects from functions.

1.23   Declare, access pointers to objects

1.24   Use of 'this' operator

1.25   Write small programs using the above concepts.

2.0 Constructors, Destructors and Operator Overloading

2.1   Define constructor and destructor.

2.2   Parameterized constructors.

2.3   Multiple Constructors in a class.

2.4   Constructors with default arguments

2.5   Copy Constructor.

2.6   Destructors

2.7   Define Operator Overloading

2.8   Overloading of Binary Operators with operator function as member and friend function

2.9   Overloading of Unary Operators with operator function as member and friend function

2.10   Rules for overloading of operators

2.11   Illustrate the above with small programs.

3.0   Understand derived classes and inheritance

3.1   State the necessity for inheritance.

3.2   Explain the relation between base class and derived class.

3.3   Write the format / syntax for defining a derived class

3.4   Explain the three types of access control – public, private & protected.

3.5   Explain types of inheritance with examples and virtual base class.

3.6   Explain concept of virtual functions and its applications.

3.7   Write small programs to illustrate the above concepts.

4.0   Understand the C++ I/O

 4.1   List the C++ I/O operators with their meaning.

4.2   Write the basics of formatted I/O.

 4.3   Explain I/O manipulators and give examples.

 4.4   Explain file I/O and classes of stream.h.

4.5   Explain the binary I/O functions like get( ) and put( ).

 4.6   Write the format and working of file I/O functions like open( ), read( ), write( ), count( )

5.0   Know Templates

5.1   Explain the need for Templates**.**

5.2   List the types of Templates.

5.3   **Function Templates**

   5.3.1   Templates with Single Argument Types.

   5.3.2   Creating function based Templates.

   5.3.3   Templates with multiple argument types.

5.4   **Class Templates**

   5.4.1   Syntax.

   5.4.2   Creating Classes based on Template.

   5.4.3   Class Template for Stack Data Structure.

COURSE CONTENTS

OOP methodology: Principle, properties, portability and standards. Structure of C++ program.
   I/O Operations, statements, keywords.   Class/object functions, classes & structures,
   constructor and destructors, friend function, inline functions, passing objects to functions –
   pass by value and pass by reference, returning objects from functions,   operator
   overloading, virtual function, function overloading.

Constructors, Destructors and Operator Overloading :   Constructor and destructor -
      Parameterized constructors - Multiple Constructors - Constructors with default
      arguments - Copy Constructor – Destructors - Operator Overloading -   Overloading of

Binary Operators - Overloading of Unary Operators - Rules for overloading of operators - Example programs.

Derived classes and inheritance: Base Class and derived class, access control, types of inheritance, virtual base class, virtual functions.

C++ I/O operations: C++ I/O operators, formatted I/O, I/O manipulators, file I/O, binary I/O functions, file I/O functions.

Templates : Need for Templates – classification of templates, function templates – single argument and multiple argument, class templates.

REFERENCE BOOKS

1. Teach yourself C++   - Helbert schildt Osborne McG
2. Object-oriented Programming with C++   - Poornachandra Sarang PHI
3. Programming with C++   - E. Balaguruswamy – TMH
4. Computer Science: A Structured Approach using C++   --Forouzan/Gillberg - Thomson
5. C++ & OOPS Paradigm   - Debasish Jana PHI

DIGITAL ELECTRONICS LAB

Subject Title : Digital Electronics Lab

Subject Code : CM-307

Periods/Week : 03

Periods/Semester : 45

LIST OF EXPERIMENTS

1. Identification of Digital ICs and noting down pin details from data sheets
    Identify given digital ICs and draw the pin diagrams. (Use TTL and CMOS ICs of AND, OR, NOT, NAND, NOR and XOR gates with two and three inputs)

2. Verify the truth tables of AND, OR, NOT, NAND, NOR and Ex-OR Gates

3. Realize AND, OR, NOT, XOR functions using NAND only, NOR only

4. Verify Demorgan's Laws using given digital trainer kit and given TTL gates

5. Construct Half adder and full adder circuits and verify their functionality

6. To construct clocked Flip Flops using Logic gates/Digital Trainer kits and verify its truth table.
    a) Verify the truth table of CD 4013 Dual D flip Flop
    b) Verify the functionality and truth table of 74L71 RS flip flop with Preset and Clear
    c) Verify the Truth table of JK FF using 7476 IC.
    d) Construct D and T flip flops using 7476 and verify the truth tables.
    e) Use Digital trainer kits where ever it needs for above experiments

7. To construct and verify the function of Asynchronous counters

8. To construct and verify the function of decade counter using 7490 ICs.

    a) Change the modulus of the counter

    b) Display decimal number using 7447

9. To Construct and verify the function of Synchronous counters

10. To construct and Verify the function of up/down counter

11.   To construct and Verify the function of shift register

12 .   To study the Features of Encoders and Decoders

13 .   To study the Features of Multiplexers and Demultiplexers

14   Setup circuit of a single decimal 4-bit BCD and vice-versa using gates

15   Setup circuit for displaying hexadecimal code on a 7 segment display

16   To verify truth table and to study the operation of tri-state output buffer

17.   To verify the function of 4-bit magnitude comparator using logic gates

RDBMS LAB

Subject Title : **RDBMS Lab**

Subject Code : **CM- 308**

Periods per week : **06**

Periods per Semester : **90**

1   Know installation of Oracle

2   Exercise on creating tables

3   Exercise on inserting records

4   Exercise on updating records

5   Exercise on modifying the structure of the table

6   Exercise on Select command

7   Exercise on querying the table using clauses like WHERE, ORDER, IN, AND, OR, NOT

8   Exercise on creating and deleting of indexes

9   Exercise on various group functions

10   Exercise on Number functions, character functions, conversion functions and date functions

11   Exercise on set operators

12   Exercise on sub queries

13   Exercise on Joins

14   Exercise on various date and number format models

15   Exercise on Sequences

16   Exercise on synonyms

17   Exercise on views

18   Exercise on creating tables with integrity constraints

19   Write programs using PL/SQL control statements

20   Exercise on PL/SQL cursors

21   Exercise on PL/SQL exception handling

22   Exercise on Procedures

23   Exercise on Functions

24   Exercise on Recursion

25   Exercise on Triggers

26   Exercise on Packages

RDBMS LAB			
SI.No	**Name of the Experiment**	**Objectives**	**Key Competencies**
1	Know installation of Oracle	Perform the following: i. To identify the version of Oracle being installed ii. To understand the RAM and HDD requirements for Oracle installation iii. To comprehend the installation steps correctly iv. Setting up of Oracle Administrative Password v. Configuring the Oracle database after post-installation steps of Oracle viz configuring administrative rights for performing vi. To login to Oracle as administrator account and Oracle user account	❖ Observe Oracle version being installed ❖ Observe the RAM & HDD requirements ❖ Rectify any Oracle installation errors ❖ Able to login as Administrator and as Oracle user account
2	Exercise on creating tables	Perform the following: i. To login with Oracle user account ii. To give correct syntax for table creation iii. To give correct data type for the required fields with appropriate size iv. To display the structure of the table	❖ Correct Table creation syntax errors ❖ Correct the wrong data types and inappropriate sizes for the respective fields ❖ Check for displaying the structure of the table
3	Exercise on inserting records	Perform the following: i. Check for the required table present already ii. To insert the records correctly iii. To display the records correctly	❖ Correct syntax errors for Insertion of record ❖ Check for insertion of proper values for the required fields ❖ Verify the correct values pertaining to the record are inserted in the required table

SI.No	Name of the Experiment	Objectives	Key Competencies
		RDBMS LAB	
			❖ Check for displaying of the records correctly
4	Exercise on updating records	Perform the following: i. Check for the required table present already ii. To update the records correctly iii. To display the updated records	❖ Correct syntax errors in updating a record ❖ Check for updating proper values for the required fields ❖ Check for displaying of the updated records correctly
5	Exercise on modifying the structure of the table	Perform the following i. To identify the required table present in the system already ii. To add new column iii. To display the records correctly	❖ Correct syntax errors in modifying the structure of the table ❖ Check whether required field is newly added to the existing table ❖ Check for displaying of the modified table correctly
6	Exercise on Select command	Perform the following i. To identify the required table present already ii. To display the records in the required table	❖ Check for syntax error in usage of Select command ❖ Check whether Select command is given correctly to display all the records
7	Exercise on querying the table using clauses like WHERE, ORDER, IN,AND, OR, NOT	Perform the following: i. To use the Select command ii. To use the clauses WHERE, ORDER, IN,AND, OR, NOT along with Select command on the given records in the table	❖ Check for syntax error in usage of Select command with appropriate clauses ❖ Check whether Select command along with appropriate clause is given correctly for the required condition ❖ Check the usage of clauses WHERE, ORDER, IN,AND,

			RDBMS LAB	
SI.No	**Name of the Experiment**	**Objectives**	**Key Competencies**	
			OR, NOT along with Select command appropriately	
8	Exercise on creating and deleting of indexes	Perform the following i. To create index on a single column in a Table ii. To create index on more than one columns in the Table iii. To drop the index	❖ Check for syntax error in usage of Index command ❖ Check for creation of index on single column index ❖ Check for creation of index on more than one columns (Composite Index) ❖ Check for the usage of dropping the index	
9	Exercise on set operators	Perform the following i. To use set command ii. To use set command along with WHERE condition	❖ Check for syntax error in the usage of SET command ❖ Check for usage of SET command for updating values based on certain condition on few records	
10	Exercise on sub queries	Perform the following i. To use Select command ii. To use appropriate Operators - IN	❖ Check for the syntax error in usage of sub queries ❖ Check for the correctness of the usage of appropriate operators used	
11	Exercise on Joins	Perform the following i. To create two tables ii. To use the common field if two tables are used iii. To know different types of Join	❖ Check for the correctness of the syntax used for joining ❖ Check if the join is created between two tables ❖ Check if self join is created	
12	Exercise on various date and number format models	Perform the following: i. To use date formats correctly ii. To use number formats correctly	❖ Check for the syntax of the date formats ❖ Check for the syntax of the number formats	

		RDBMS LAB	
SI.No	Name of the Experiment	Objectives	Key Competencies
13	Exercise on Sequences	Perform the following i. Create a sequence ii. Usage of sequence along with NEXTVAL()	❖ Check for the syntax of Sequence ❖ Check for the usage of sequence variable along with NEXTVAL()
14	Exercise on synonyms	Perform the following: i. Create Synonym for a Table, View, Sequence etc. ii. Using of Synonym	❖ Check for the syntax of Synonym ❖ Check for the correctness of implementation of Synonym
15	Exercise on views	Perform the following i. Create View for a certain collection of records in a Table ii. Query the View	❖ Check for the syntax correctness of View ❖ Check for the correctness of the implementation of View
16	Exercise on creating tables with integrity constraints	Perform the following i. Create primary key ii. Create Foreign key or referential integrity constraint iii. Create NOT NULL constraint iv. Create UNIQUE Key constraint v. Create CHECK constraint	❖ Check for the syntax errors in usage of all types of Integrity constraints ❖ Check whether different types of Integrity constraints are used
17	Exercise on PL/SQL Implicit cursors	Perform the following i. Know different types of cursors- Implicit and Explicit cursors ii. Use appropriate attributes of Implicit Cursor for checking updations iii.	❖ Check for the syntax errors in using attributes ❖ Check whether all the attributes relevant to implicit cursors are used ❖ Check for proper conditions using appropriate attributes to test whether updations are performed

RDBMS LAB			
SI.No	**Name of the Experiment**	**Objectives**	**Key Competencies**
18	Exercise on PL/SQL Explicit cursors	Perform the following i. Know different types of cursors- Implicit and Explicit cursors iv. Create Explicit cursors by declaration v. Open the Explicit cursor vi. Fetch the data vii. Close the Explicit cursor viii. Use appropriate attributes of Explicit cursor for checking updations	❖ Check for the syntax errors in using attributes ❖ Check whether all the attributes relevant to explicit cursors are used ❖ Check for proper conditions using appropriate attributes ❖ Check for proper conditions using appropriate attributes to test whether updations are done
19	Write programs using PL/SQL control statements	Perform the following i. To use IF .. ELSE statements ii. To use iterative statements – Simple loop, While Loop, For Loop	❖ Check for the syntax of IF.. ELSE statements ❖ Check for the syntax of all iterative statements
20	Exercise on PL/SQL in built exception handling	Perform the following i. Know about types of exception handling ii. To handle built-in exceptions	❖ Check for handling of inbuilt exceptions ❖ Check for raising of user defined exception ❖ Check for handling of user defined exception with appropriate error messages
21	Exercise on PL/SQL in user defined exception handling	Perform the following i. To declare user defined exception ii. To raise user defined exception iii. To handle user defined exception	❖ Check for declaration of user defined exception ❖ Check for proper raising of exceptions ❖ Check for proper handling of user defined exception with appropriate error messages

RDBMS LAB			
SI.No	Name of the Experiment	Objectives	Key Competencies
22	Exercise on Procedures	Perform the following i. To know the concept of stored procedures ii. To declare procedures iii. The type of parameters IN,IN OUT, OUT iv. To call procedures from other procedures	❖ Check for proper declaration of procedures ❖ Check for syntax of parameters and its type ❖ Check for proper calling of procedures
23	Exercise on Functions	Perform the following i. To know the concept of stored functions ii. To declare function with return data iii. To call functions from other functions	❖ Check for proper declaration of function ❖ Check for syntax of parameters and its data type ❖ Check for proper return data type from the functions ❖ Check for variable assignment to get the returned value from the function
24	Exercise on Recursion	Perform the following i. To know the concept of stored functions and stored procedures ii. To call the procedure and function by itself ii. To place a condition to terminate from calling itself	❖ Check for the syntax of stored function or procedure ❖ Check for calling the function or procedure in the same function / procedure ❖ Check for the condition to terminate from calling itself
25	Exercise on Triggers	Perform the following i. To know the concept of Trigger ii. To know the types of Triggers iii. To know about Row level trigger and Statement level trigger iv. To know the hierarchy of trigger is fired	❖ Check for the syntax of Trigger ❖ Check for proper declaration of when the trigger is to be fired

RDBMS LAB			
Sl.No	**Name of the Experiment**	**Objectives**	**Key Competencies**
26	Exercise on Packages	Perform the following i. To know the concept of Package specification ii. To know the concept of Package body specification iii. To know the usage of package elements	❖ Check for the syntax of Package specification ❖ Check for the syntax of Package body specification ❖ Check for the proper usage of Package elements

OOPS through C++ Lab

Subject Title   :   **OOPS through C++ Lab**

Subject Code   :   **CM - 309**

Periods per Week   :   **03**

Periods per Semester   :   **45**

LIST OF EXERCISES

1   Write programs using input and output operators and comments.

2   Write programs using if/ if – else/ nested if statement.

3   Write programs using loop statements – while/ do-while / for.

4   Write programs using arrays.

5   Write programs using classes & object.

6   Write programs using constructor and destructor.

7   Write programs working with two/more classes using Friend function.

8   Write programs using inline function.

9   Write a program to pass an object as a functions argument – pass object by value, pass object by reference.

10   Write a program to demonstrate the use of operator overloading on unary operator & binary operators like ++ operator and << operator.

11   Write a program to demonstrate the use of function overloading.

12   Write a simple program on array of objects and pointers to objects.

13   Write programs using new, delete with classes.

14   Write simple programs illustrating use of all types of inheritances.

15   Program illustrating virtual base class.

16   Program illustrating virtual functions.

17   Programs using templates.

OBJECTIVES AND KEY COMPETENCIES:

Exp. No.	Name of the experiment	Objectives	Key Competencies
1	Write programs using input and output operators and comments.	(a) Write a program to accept input and display it. (b) Write comments in a program.	(a) Identify the differences between C and C++. (b) Use header files. (c) Use *cin* and *cout*. (d) Write comments. (e) Compile the program. (f) Rectify the errors in the program. (g) Run the program. (h) Test the output with various input data.
2	Write programs using if/ if – else/ nested if statement.	Write programs using conditional control statement.	(a) Identify the differences between C and C++. (b) Use various conditional control statements. (c) Compile the program. (d) Rectify the errors in the program. (e) Run the program. (f) Test the output with various input data.
3	Write programs using loop statements – while/ do-while / for.	(a) Write a program using loop statements. (b) Write the same program using other loops.	(a) Identify the differences between C and C++. (b) Use various loop statements. (c) Compile the program. (d) Rectify the errors in the program. (e) Run the program. (f) Observe the output with various input data. (g) Write the same program using while/ do – while/ for statement.
4	Write programs using	Write programs using	(a) Use arrays.

	arrays.	arrays.	(b) Declare array. (c) Rectify the errors. (d) Test the output.
5	Write programs using classes & object.	(a) Write a program using classes and objects and define the methods within the class. (b) Write a program using classes and objects and define the methods outside the class.	(a) Create a class, and its syntax. (b) Add data members and methods to a class. (c) Declare methods within the class and outside the class. (d) Use scope resolution operator. (e) Create objects of a class. (f) Execute the program.
6	Write programs using constructor and destructor.	(a) Write a program using default constructor. (b) Write a program using parameterized constructor. (c) Write a program using copy constructor. (d) Write a program using constructor and destructor.	(a) Purpose of various types of constructors. (b) Purpose of destructor. (c) Use constructor and destructor.
7	Write programs working with two/more classes using friend function.	Write a program using friend function.	(a) Necessity of friend functions. (b) Declare friend function.
8	Write programs using inline function.	Write a program using inline function.	(a) Declare inline function with syntax. (b) Difference between function and inline code.
9	Write a program to pass an object as a function argument.	Write a program to pass an object as a functions argument (a) pass object by value, (b) pass object by reference.	(a) Pass objects by value. (b) Pass objects by reference.
10	Write a program to	(a) Write a program using	(a) Use operator overloading for unary

	demonstrate the use of operator overloading	unary operator. (b) Write programs using binary operator like ++, <<	and binary operators. (b) Declare methods for operator overloading.
11	Write a program to demonstrate the use of function overloading.	Write program to illustrate the usage of function overloading.	(a) Use function overloading. (b) Declare methods in function overloading.
12	Write a simple program on array of objects and pointers to objects.	Write a simple program on array of objects and pointers to objects.	(a) Create array of objects. (b) Create pointers to objects.
13	Write programs using new, delete with classes.	Write programs to illustrate the use of new and delete with classes.	Use dynamic allocation operators.
14	Write simple programs illustrating use of all types of inheritances.	Write simple programs illustrating use of (a) single inheritance. (b) multiple inheritance. (c) multilevel inheritance.	(a) Create base class and derived class. (b) Use : operator. (c) Use access specifiers.
15	Program illustrating virtual base class.	Write a program to illustrate the usage of virtual base class.	(a) Create virtual base class. (b) Use virtual keyword.
16	Program illustrating virtual functions.	Write a program to illustrate the usage of virtual functions.	(a) Create virtual functions. (b) Use virtual keyword.
17	Programs using templates.	Write a program to illustrate the usage of templates.	(a) Create function templates with single argument. (b) Create function templates with multiple arguments. (c) Create class templates.

Communication Skills and Life Skills

(Common to all the branches)

Subject Title : **Communication Skills and Life Skills**
Subject Code : **308**
No. of periods per week : **3**
No. of periods per semester : 45

Communication Skills

Sl. No	Unit	Objectives	Key Competencies
1	Listening- I	• Listen for the main idea • Listen for specific details	• Learn to listen for main idea • Listen for specific details • Listen and understand varied material • Make inferences • Know appropriate vocabulary
2	Listening-II	• Listen for and identify the main idea • Listen for and identify specific details	• Learn to listen for main idea • Listen for specific details • Listen and understand varied material • Make inferences • Know appropriate vocabulary
3	Introducing |Oneself	• Introduce oneself • Learn vocabulary relevant to making introductions • Learn the difference between an informal and formal introduction	• Use formal and informal introduction appropriately • Know relevant vocabulary to talk about skills hobbies, strengths and weaknesses
4	Describing Objects	• Learn vocabulary and expressions useful for describing objects • Describe objects	• Learn to describe an object • Use relevant vocabulary
5	Reporting Past Incidents	• Report past incidents • Use appropriate grammar and vocabulary for reporting	• Use appropriate tense • Learn appropriate vocabulary • Know how to express past incidents
6	Just A Minute	• Speaking fluently and accurately for a minute	• Learn to speak on any given topic\To organize one's thought • Sequencing ideas • Know how to introduce a given topic • Learn how to give a good closure • Know and avoid common mistakes
7	Group Discussion	• Understand the concept of a group discussion • Participate in a group discussion	• Participate in a group discussion • Learn appropriate vocabulary and expressions • Use good body language

		• Learn the do's and don'ts of group discussion	• Know group dynamics • Be aware of group do's and don'ts in a group discussion • Know appropriate etiquette
8	Interview Skills	• Prepare for an interview • Face an interview	• Get the confidence to face an interview • Learn good body language • Know frequently asked questions and answer them appropriately • Learn to dress for an interview • Know the do's and don'ts

Life Skills

Sl. No	Unit	Objectives	Key Competencies
1	Positive Attitude	Concept of positive attitude	• Learn to think positively • Become confident
2	Goal Setting	Importance of setting goals	• Learn to set goals • Know how to achieve goals • Know about personal and professional goals
3	Time Management	To manage time in an optimum manner	• Know about time wasters • Learn to plan, prioritize, schedule • Learn to become productive • Learn to manage time productively
4	Problem Solving and Decision Making	Learn to solve problems and take appropriate decisions	• Learn the steps in problem solving • To think out of the box • Learn to solve the problems rationally
5	Creativity	To become creative	• Think innovatively • Learn to think out of the box • Learn to look at old things in a new way • Think differently
6	Managing Emotions	Understand different emotions	• Learn to manage stress • Know about anger management • Understanding and managing emotions
7	Teamwork	Importance of teamwork	• Learn to be a team player • Know the importance of teamwork • Learn the traits of a good team • Know the stages in a team formation
8	Leadership Skills	Concept of leadership	• Learn leadership traits • Know leadership styles

			• Be a future leader

Total Marks: 100

Internal: 40 marks

External: 60 marks

End Examination:

- Listening skill: **10 marks**
- Speaking Skill: **10 marks**
  (Describing Objects, Reporting past incidents, JAM)
- Interview Skills or Group Discussion: **10 marks**
- Life Skills: **30 marks**

Internal Assessment:

- Attendance, Discipline: **5 marks**
- Lab manual Submission: **15 marks**
- Classroom presentations: **20 marks**

IV SEMESETER

ENGINEERING MATHEMATICS – IV
(Common to all Branches)

Subject Title : **Engineering Mathematics-IV**
Subject Code : **CM - 401**
Periods per week : **04**
 Periods per Semester : **60**

Blue Print

S. No	Major Topic	No of Periods	Weightage of Marks	Short Type			Essay Type		
	Unit -I Differential Equations			R	U	App	R	U	App
1	Homogenous Linear Differential equations with constant coefficients	05	09	1	2	0	0	0	0
	Unit – II								
2	Non-homogenous Linear Differential equations with constant coefficients	15	26	1	1	0	1	1	0
	Unit – III								
3	Laplace Transforms	25	49	2	1	0	2	1	1
	Unit – IV								
4	Fourier Series	15	26	1	1	0	1/2	1/2	1
	Total	60	110	5	5	0	3 1/2	2 1/2	2
			Marks	15	15	0	35	25	20

R:	**Remembering type**	50 marks
	U: Understanding type	40 marks
App:	**Application type**	20 marks

OBJECTIVES
Upon completion of the course the student shall be able to

Unit-I
Differential Equations

1.0   Solve Homogeneous linear differential equations with constant coefficients in engineering situations

   1.1   Solve Differential equations of the type $(aD^2 + bD + c)y = 0$ when the roots of the auxiliary equation are real and different, real and repeated, complex.

   1.2   Solve the higher order homogeneous differential equations with constant coefficients.

Unit-II

2.0   Solve Non Homogeneous linear differential equations with constant coefficients in engineering situations

   2.1   Explain the concept of complementary function, particular Integral and general solution of a differential equation.

   2.2   Solve n^{th} order differential equation of the type $f(D)\, y = X$ where $f(D)$ is a polynomial of nth order and X is a function of the form k, e^{ax} , *Sinax, Cosax, x^n.*

Unit-III

3.0   Use Laplace transforms to solve differential equation in engineering problems

   3.1   Write the definition of Laplace Transform and Laplace transform of standard functions.

   3.2   Explain the sufficient conditions of existence of Laplace Transform.

   3.3   Write the properties of Laplace Transform – Linear property, First shifting property, Change of Scale.

   3.4   Solve simple problems using the above properties

   3.5   Write formulae for Laplace transform of $t^n f(t)$, $\dfrac{f(t)}{t}$, $f^{(n)}(t)$, $\displaystyle\int_0^t f(u)\, du$ interms of Laplace transform of $f(t)$.

   3.6   Solve simple problems using the above formulae.

   3.7   Define unit step function and write the Laplace Transform of unit step function.

   3.8   Write second shifting property.

   3.9   Define inverse Laplace Transform and write inverse Laplace Transform of standard functions.

   3.10   Solve simple problems on 3.9

   3.11   Write first shifting property of inverse Laplace Transfrom.

   3.12   Solve simple problems on 3.11

   3.13   Write inverse Laplace Transforms corresponding to Laplace Transform of the functions mentioned in section 3.5

   3.14   Solve simple problems on 3.13.

   3.15   Define convolution of two functions and state convolution theorem.

   3.16   Solve simple problems on 3.15.

   3.17   Use Laplace and inverse Laplace Transforms to solve simple differential equations of second order.

Unit-IV

4.0   Understand the Fourier series expansion of functions

   4.1   Define the orthogonality of functions in an interval.

   4.2   Define Fourier series of a function on the interval $(c,\, c + 2\pi)$ and write the Euler's formulae for determining the Fourier coefficients.

   4.3   Write sufficient conditions for the existence of Fourier series for a function.

   4.4   Find Fourier series of simple functions in the range $(0, 2\pi),\ (-\pi,\, \pi)$.

   4.5   Write Fourier series for even and odd functions in the interval $(-\pi,\, \pi)$.

COURSE CONTENT
Differential Equations

1. Homogenous linear differential equations with constant coefficients of order two and higher with emphasis on second order.

2. Non-homogenous linear differential equations with constant coefficients of the form
$f(D)y = X$, where X is in the form k, e^{ax}, $\sin ax$, $\cos ax$, x^n, (n= 1,2) – complimentary

function, particular integral and general solution.

Laplace Transforms (LT)
   3. Definition, sufficient conditions for existence of LT, LT of elementary functions, linearity property, scale change property, first shifting property, multiplication by t^n, division by t, LT of derivatives and integrals, unit step function, LT of unit step function, second shifting theorem, inverse Laplace transforms- shifting theorems and change of scale property, multiplication by s^n and division by s – examples of inverse LT using partial fractions – convolution theorem (no proof) – applications of LT to solve ordinary differential equations with initial conditions (2nd order only)

Fourier series
   4. Orthogonality of trigonometric functions, Representation of a function in Fourier series

over the interval $(c, \ c+2\pi)$, Euler's formulae, sufficient conditions for existence of

Fourier series for a function, even, odd functions and their Fourier series over the

interval $(0, 2\pi)$.

Reference Books
                Higher Engineering Mathematics, B.V.Ramana, Tata McGraw-Hill

OPERATING SYSTEMS

Subject Title   **: Operating Systems**

Subject Code   **: CM– 402**

Periods per Week   **: 05**

Periods per Semester **: 75**

TIME SCHEDULE AND BLUEPRINT

S. No.	Major Topic	No. of Periods		Weightage of Marks	Short Type	Essay Type
		Theory	Practice			
1	Introduction to Operating System	10	0	16	2	1
2	Process Management	24	4	39	3	3
3	Storage management	15	4	26	2	2
4	Secondary storage management	10	2	16	2	1
5	Files and Protection	06	0	13	1	1
	TOTAL	**65**	**10**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the course, the student shall be able to

1   Know about basics of operating systems.

    1.1   Define an operating system.

    1.2   Discuss history of operating system.

    1.3   Discus about various operating systems.

    1.4   Distinguish spooling and buffering.

    1.5   Explain the concepts like multiprogramming and timesharing.

    1.6   Differentiate between distributed and real time systems.

    1.7   Describe multiprocessor systems.

    1.8   Understand the operating system components.

    1.9   Discuss operating system services.

    1.10   Define system call with an example.

    1.11   Know different types of system calls.

    1.12   Define single user, multi user operating system structure.

2   Understand process management.

2.1   Define processes.

2.2   Understand a) sequential process b) process state diagram

     c) Process control block.

2.3   Describe process creation and termination.

2.4   Understand the relation between processes.

2.5   Describe threads and multithreading.

2.6   Explain scheduling concepts.

2.7   Describe scheduling queues and schedulers.

2.8   Explain C.P.U. scheduling and scheduling criteria.

2.9   Explain various scheduling algorithms – FIFO, SJF, Round Robin, Time sharing,

     Multilevel scheduling, Multilevel feedback Queue scheduling.

2.10   Describe semaphores.

2.11   Explain inter process communication.

2.12   Define a deadlock.

2.13   State the necessary conditions for arising deadlocks.

2.14   State various techniques for deadlock prevention.

2.15   Discuss briefly deadlock avoidance and detection.

2.16   Describe the process of recovering from deadlock.

3   Understand the storage management.

3.1   Describe briefly address binding, dynamic loading, dynamic linking, overlays.

3.2   Describe briefly swapping.

3.3   Explain single partition allocation.

3.4   Explain multiple partition allocation.

3.5   Explain paging concept.

3.6   Explain briefly segmentation.

3.7   Define virtual memory techniques.

3.8   Describe briefly demand paging.

3.9   Describe page replacement.

3.10   Discuss briefly on page replacement algorithms - FIFO, LRU, optimal.

3.11   Define the concept of thrashing.

3.12   Explain working set model and page fault frequency.

4.0   Understand the secondary storage management.

4.1   Explain disk structure.

4.2   Understand free space management.

4.3   Describe various allocation methods.

4.4   Explain various disk scheduling algorithms- FCFS, SST, Scan, C-Scan, Look.

5.0   Understand file system and protection.

5.1   Define file management.

5.2   List and explain various file operations.

5.3   List and explain various access methods.

5.4   Explain directory structure organization.

5.5   Describe the concept of file protection.

COURSE CONTENTS

1. Introduction to operating system

Definition – History of operating system – Types of Operating system – Functions of Operating system - Spooling & buffering – Multiprogramming and time sharing – Distributed and Real time systems – multi processor systems - Operating system components – Operating system services - system calls- single and multi user operating system structure.

2. Processor management

Processor – Sequential Processes – Process State Diagram – Process Control Block – process creation & termination – Relations between processes – Threads and Multi-threading – Scheduling Concepts – Schedulers – CPU scheduling and scheduling criteria – Scheduling algorithms – semaphores – Inter Process Communication - Deadlocks

3. Storage management

Address binding – Dynamic Loading – dynamic linking – overlays – swapping – single and multiple partitions allocation – Paging – segmentation – Virtual memory – Demand Paging - Page replacement algorithms – Thrashing - working set model – page fault frequency.

4. Secondary storage management

Disk structure – Free space management – Allocation methods – Scheduling Algorithms

5. File systems

Introduction to file systems – File management – File operations – Access methods – Directory Structure organization – File protection

REFERENCE BOOKS

1.   Operating Systems   --   Silberschatz and Galvin

2.   Operating Systems   --   Dietel and Dietel

3.   Operating Systems   --   Dhamdhere (TMH)

4.   Advanced Operating Systems   --   Tanenbaum

DATA STRUCTURES THROUGH C++

Subject Title	:	Data Structures through C++
Subject Code	:	CM – 403
Periods per Week	:	05
Periods per Semester	:	75

TIME SCHEDULE AND BLUE PRINT						
Unit No	Major Topic	No of Periods		Weightage of marks	Short Type	Essay Type
		Theory	Practice			
1	Introduction to Data structures	10	0	6	2	0
2	Linear Data structures	20	10	52	3	4
3	Non Linear Data structures	13	03	26	2	2
4	Sorting	12	02	18	1	1½
5	Searching	04	01	08	1	½
	Total	**59**	**16**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the subject the student shall be able to

1.0 Understand an Overview of Data Structures

1.1. Define data structure and classify them

1.2. Explain linear data structures

1.3. Describe nonlinear data structures

1.4. Explain data types and abstract data types

1.5. State algorithm analysis for time requirements

2. Understand Linear Data structures

   2.1. **Comprehend Linked list**

      2.1.1. List advantages of linked lists

      2.1.2. State the purpose of dummy header

      2.1.3. Create a singly linked list

      2.1.4. Perform insertion and deletion operation on a singly linked list

      2.1.5. Know how to search and replace an element in a linked list

      2.1.6. Know to reverse a singly linked list

      2.1.7. Create a singly circular linked list

      2.1.8. Create a doubly linked list

      2.1.9. Insert and delete elements in a doubly linked list

   2.2.   **Understand Queues and Stacks**

      2.2.1   Define stack

      2.2.2   Explain the two operations of a stack

      2.2.3   Implementation of stacks

      2.2.4   List applications of stacks

      2.2.5   Convert infix to postfix expression

      2.2.6   Evaluate postfix expression

      2.2.7   Define queue

      2.2.8   Explain the operations on queues

      2.2.9   Discuss application of queues

      2.2.10 Explain array implementation of queue

      2.2.11 Implement circular queues

      2.2.12 Explain priority queues

      2.2.13 Definition of sparse matrix – converting ordinary matrix to sparse matrix
              transpose of sparse matrix

3.0 Know the Tree structures

      3.1   Define a tree

      3.2   Explain the terminology related to tree

      3.3   Define a binary tree

      3.4   Explain the linear representation and linked list representation of a Binary tree

      3.5   Write a program to create and display a tree

      3.6   Perform traversal operation on trees

3.7   Construct a tree using inorder and preorder traversal

3.8   Construct a tree using inorder and postorder traversal

3.9   Convert of general trees to binary trees

3.10   Perform operations on a binary tree

3.11   List any 3 Applications of trees

4.0 Understand various Sorting techniques

4.1   Define sorting

4.2   State the need of sorting

4.3   List the four methods of sorting

4.4   Explain the method of bubble sort

4.5   Write the algorithm for bubble sort and define its complexity

4.6   Discuss the program for bubble sort

4.7   Explain the method of selection sort

4.8   Write the algorithm for selection sort and define its complexity

4.9   Discuss the program for selection sort

4.10   Explain the method of insertion sort

4.11   Write the algorithm for insertion sort and define its complexity

4.12   Discuss the program for insertion sort

4.13   Explain the method of quick sort

4.14   Explain the method of merging two sorted lists

4.15   Discuss the program to implement merge sort on two sorted lists

5.0   Understand different Searching Techniques

5.1 Define searching

5.2 State the need of searching

5.3 List two types of searching

5.4 Explain the method of Linear Search

5.5 Write the algorithm for Linear Search and its complexity

5.6 Discuss the program for Linear Search

5.7 Explain the method of Binary Search

5.8 Write the algorithm for Binary Search and its complexity

5.9 Discuss the program for Binary Search

COURSE CONTENTS

1. Introduction to data structures

Data structures – Linear & non linear, data types and abstract data types, algorithm analysis for time and space requirements.

2. Linear data structures

Linked Lists – Singly linked lists – Create, insert, delete, sort, search and replace an element in a linked list – Reverse, Create singly circular linked list.   Doubly linked list – Create, insert, delete elements in doubly linked list -   Create doubly linked circular list.

Queues and stacks

Implementation of stacks, application of stacks, converting infix to postfix expression and evaluation – Applications & Implementation of queues, Circular queues, Priority queue – sparse matrix

3. Non Linear Data Structures
Trees

Trees –Binary trees – Linear representation – Linked list representation, tree traversals, Tree Conversion & Applications

4. Sorting

Introduction to different sorting techniques – selection, insertion, bubble, quick & merge.

5   Searching

Introduction to different searching techniques – sequential and binary.

REFERENCE BOOKS

1.   Data Structures: A Pseudocode Approach with C++ - Gilberg / Forouzan
2.   Data Structures using C & C++   - Tanenbaum, Langsam and
                                                                          Augenstein (PHI).
3. Data structures through C++   - Yashwanth Kanetkar
4. An Introduction to data structures with applications   - Tremblay & Sorenson

MICROPROCESSORS

Subject Title   :   **Microprocessors**

Subject Code   :   **CM– 404**

Periods per Week   :   **05**

Periods per Semester   :   **75**

TIME SCHEDULE & BLUEPRINT

S.No	Major Topic	No. of Periods		Weightage of Marks	Short Type	Essay Type
		Theory	**Practice**			
1	Introduction & Architecture	10	0	11	2	½
2	Instruction set of 8086	15	3	26	2	2
3	Interrupts and Assembly language programming	20	8	34	3	2 ½
4	Peripheral devices and Interfacing	12	2	26	2	2
5	Intel advanced processors	5	0	13	1	1
	TOTAL	**62**	**13**	**110**	**10**	**08**

OBJECTIVES

On completion of the study of the course the student shall be able to :

1.0   Explain the architecture of 8086 microprocessor.

     1.1   Define Micro computer and Microprocessor.

     1.2   Describe how a micro computer fetches and executes an Instruction.

     1.3   Explain 8086 internal architecture.

     1.4   List registers and other parts in 8086.

     1.5   Describe the function of each block in 8086.

     1.6   Demonstrate how 8086 calculates memory addresses.

     1.7   Describe the Pins and signals of 8086.

     1.8   Illustrate the bus cycles and timing diagram of 8086.

2.0   Understand the instruction set of 8086

     2.1   Draw the generalized Instruction format of 8086.

     2.2   Explain addressing modes of 8086 with examples.

     2.3   Classify the Instruction set of 8086.

2.4 Use data transfer instructions of 8086.

2.5 Use Arithmetic instructions of 8086.

2.6 Use Logic instructions of 8086.

2.7 Use processor control instructions of 8086.

2.8 Use instructions affecting flags of 8086.

2.9 Use control transfer (branching) instructions of 8086.

2.10 Use string manipulation instructions of 8086.

2.11 Describe assembler directives.

2.12 Describe the use of various assembly language development tools like Editor, Assembler, Linker, Locator and Debugger.

3.0 Understand Interrupts and write assembly language programs

3.1 Define interrupt.

3.2 State the need of interrupt.

3.3 Classify the interrupts.

3.4 Understand the Interrupts of 8086.

3.5 Explain the interrupt handling process in 8086.

3.6 Explain programmable interrupt controller 8259.

3.7 Understand the significance of assembly language Programming.

3.8 Describe the procedure for executing an assembly language program with an assembler.

3.9 Explain conditional and loop statements.

3.10 Write simple assembly language programs using conditional and loop statements.

3.11 Explain procedural programming in 8086.

3.12 Illustrate CALL, RETURN statements and parameter passing.

3.13 Write simple program using procedure and parameters passing.

4.0 Explain various peripheral devices and their interfacing with 8086

4.1 Define peripheral.

4.2 State the principles of interfacing with peripherals.

4.3 Explain parallel data communication interfacing.

    4.3.1 Understand various parallel data transfer schemes.

    4.3.2 Illustrate programmable peripheral interface – INTEL 8255.

    4.3.3 Explain the function of 8255.

    4.3.4 Explain the process of interfacing 8255 with 8086.

4.3.5   Describe DMA data transfer scheme.

4.3.6   Illustrate DMA controller – INTEL 8257.

4.3.7   Explain the function of 8257.

4.3.8   Explain the process of interfacing 8257with 8086.

4.4   Explain serial data communication interface.

4.4.1   Understand serial data communication.

4.4.2   Illustrate USART – INTEL 8251A.

4.4.3   Explain the function of 8251A.

4.4.4   Explain the process of interfacing 8251A with 8086.

4.5   Explain keyboard and display interface.

4.5.1   Understand keyboard interface using ports.

4.5.2   Understand display interface using ports.

4.5.3   Illustrate Keyboard/Display controller – INTEL 8279.

4.5.4   Explain the function of 8279.

4.5.5   Explain the process of interfacing 8279with 8086

5.0   Compare various Intel advanced processors

5.1   Compare/Contrast the features of 80286, 80386, 80486 processors.

5.2   Explain the architecture of Pentium microprocessor.

5.3   Compare/Contrast the features of advanced Pentium processors.

COURSE CONTENT

1.0   INTRODUCTION AND ARCHITECTURE

Define Micro computer, Microprocessor - how a micro computer fetches and executes an instruction - 8086 internal architecture – functional blocks of 8086 - how 8086 calculates memory addresses - Pins and signals of INTEL 8086 - Bus cycles and timing diagram

2.0   INSTRUCTION SET OF 8086

Introduction - Instruction format - Addressing modes of 8086 - Instruction execution time - Instruction affecting flags - Data transfer instructions - Arithmetic instructions - Logical instructions - String manipulation instructions - Understand the control transfer (branching) instructions of 8086 - String manipulation instructions – assembler directives - various assembly language development tools.

3.0   INTERRUPTS AND ASSEMBLY LANGUAGE PROGRAMMING

Interrupts and its classification – Interrupts of 8086 – programmable Interrupt controller 8259 - Assembly language programming - executing assembly language program with assembler - examples on conditional and loop statements - Illustrating procedure CALL and RETURN, parameter passing and procedure passing.

4.0   PERIPHERAL DEVICES AND INTERFACING

Introduction to peripherals and interface - Parallel data transfer schemes - Programmable peripheral interface – INTEL 8255 - DMA data transfer scheme - DMA controller – INTEL 8257 - Serial data communication - USART – INTEL 8251 A – Keyboard and Display controller – INTEL 8279

5.0   INTEL ADVANCED PROCESSORS

Introduction - Comparison of 80286, 80386 and 80486 processors - Pentium Microprocessor - Architecture of Pentium Processor - Comparison of advanced Pentium processors.

REFERENCE BOOKS

1.   Microprocessors & Interfacing   --   Douglas V.Hall

2.   X86 microprocessor programming   --   Venugopal and Rajkumar, TMH

3.   Advanced Microprocessors and Peripherals -- A K RAY, K M Bhurchandi, TMH

4.   Intel Microprocessors   -- Barry B Brey

.NET PROGRAMMING

Subject Title   :   **.NET PROGRAMMING**

Subject Code   :   **CM – 405**

Periods per Week   :   **05**

Periods per Semester   :   **75**

TIME SCHEDULE

Unit No	Major Topic	Periods	Weightage Of Marks	Short Type	Essay Type
1.	Basics of .NET Framework	08	16	2	1
2.	C# Fundamentals	25	34	3	2½
3.	Window Applications	14	21	2	1½
4.	ADO.NET	18	23	1	2
5.	Web Applications	10	16	2	1
	Total	**75**	**110**	**10**	**8**

Objectives:

On completion of the study of the subject the student should be able to comprehend the following

1   **Basics of .NET Framework.**

1.1   Define .NET Framework.

1.2   List features of .net framework.

1.3   Draw and explain CLR architecture

1.4   Discuss about frame work class Library.

1.5   Define Microsoft intermediate language

1.6   Discuss Common type system CTS, common type language CTL.

1.7   List .NET languages.

1.8   List advantages of .Net over C, C++, Java.

3.11   Describe common dialogue control.

3.12   Discuss about fundamentals of graphics controls like line and shape.

3.13   Explain about designing and coding simple form.

3.14   Discuss about the deploying and distribution of windows application.

4   ADO .NET

4.1   Introduction to ADO.NET

4.2   Explain data objects, dataset, data adapter, data provider.

4.3   List advantages with ADO.NET.

4.4   Describe how to connect data base to c# application through server explorer.

4.5   Explain how to display data of a table in database using Data Grid View of form.

4.6   Explain connection object , command object

4.7   Explain the process of Accessing data with data adapters and data sets.

4.8   Explain Data validation.

4.9   Explain the procedure for data binding with text box control.

4.10   Describe how to navigate through Data source.

4.11   Explain Multiple Table Connection.

5   Web Applications.

5.1   Introduction to Web Forms.

5.2   Discuss the steps for creating a web application

5.3   Describe the usage of text box, label, button, check box, radio button, drop down list, list box, data grid, hyperlink, images, panel, and hidden field.

5.4   Discuss about Data Grid View,

5.5   List and describe various Data validation controls.

5.6   Explain the process of passing data between two web forms.

5.7   Explain the process of designing and coding simple form.

5.8   Explain how to deploy and distribute a web application.

COURSE CONTENTS

   1. Basics of .NET Framework:

   Introduction to .NET Framework, Features of .Net, Common Language Runtime, Framework Class Library, Name space, common type system, common language specification, execution process of .Net program, JIT, MSIL, assembly, Garbage

Collection, Advantages of .Net over C, C++, Java. Understanding Visual Studio IDE. Know about the help system, applications of .Net.

2. **C# fundamentals:**

Introduction to C# , Features, Advantages, data types, value type, reference type, variables, constants, operators, data type conversions, Classes & Objects, interface, Arrays & Collections , oops features, conditional statements, iterative statements, exception handling, writing C# console program, debugging and executing program.

3. **Window Applications:**

Steps for creating a window application, working with various controls- text box, label , button, check box, radio button, combo box, list box, data grid, common dialog controls, creating and working with menus, distributing the windows application, database connecting, fundamentals of graphics and Graphic controls, simple designing and coding**.**

4. **ADO .NET :**

Overview of ADO.NET model , Data objects : Connection Object, Command Object, Data Readers, Data Sets & Data Adapters , working with MS-Access and Oracle Database. Features and Advantages of ADO.NET

5. **Web Applications:**

Steps for creating a web application, working with various controls- text box, label , button, check box, radio button, drop down list, list box, data grid, hyperlink, images, panel, hidden field, data validation controls, passing data between two web forms, deploying and distributing a web application.

REFERENCE BOOKS:

1. Programming in C#: A Primer -- ,Balaguruswamy, McGraw-Hill.
2. C# A Beginner's Guide -- Herbert Schildt, McGraw-Hill.
3. Learning C# -- Jesse Liberty and Brian MacDonald, O'Reilly
4. Pro C# and the .NET Framework -- Andrew Troelsen, Apress
5. Mastering Visual C# .NET -- Jason Price&Mike Gunderloy Publisher: Wiley

WEB DESIGNING

Subject Title   :   **Web Designing**

Subject Code   :   **CM – 406**

Periods per Week   :   **05**

Periods per Semester   :   **75**

TIME SCHEDULE & BLUE PRINT

S.No	Major Topic	No. of Periods		Weightage of Marks	Short Type	Essay Type
		Theory	Practice			
1	Principles of Web design	04	00	3	1	1
2	HTML & CSS	15	06	29	2	2
3	XML & Web Servers	07	02	16	1	1
4	JavaScript	15	04	31	3	2
5	PHP	17	05	31	3	2
	TOTAL	**58**	**17**	**110**	**10**	**08**

OBJECTIVES

On completion of the study of the course the student shall be able to:

1. Explain the principles of Web Designing.

> 1.1   Describe the anatomy of web page.
>
> 1.2   Illustrate the format of web page.
>
> 1.3   Identify various Web page elements.
>
> 1.4   Explain the process of navigation through web pages
>
> 1.5   State the steps in building a web site
>
> 1.6   State the steps in launching a web site.
>
> 1.7   State the steps in maintaining a web site.

2. Use various HTML tags and apply style sheets.

> 2.1   Describe the importance of HTML.
>
> 2.2   Use the basic tags <html>, <head>, <title>, <body>.
>
> 2.3   Use the following tags with attributes,

- <h1> to <h6>
- <q>
- <strong>
- <cite>
- <big>
- <small>
- <ins>
- <del>

2.4   Use the following presentation tags with attributes,

- <b>
- <i>
- <u>
- <strike>
- <sub>
- <sup>
- <center>
- <font>
- <marquee>.

2.5   Use the hyperlink and imaging tags with attributes.

2.6   Use the <object> tag with all important attributes.

2.7   Use the listing tags along with attributes.

2.8   Use colors to various HTML elements.

2.9   Use the following table creation tags with attributes,

- <table>
- <col>
- <colgroup>.
- <tr>
- <td>
- <th>
- <tbody>
- <thead>
- <tfoot>

2.10 Use the following control tags with attributes,

- <form>

- <input>
- <button>
- <label>
- <select>
- <options>
- <textarea>
- <legend>.

2.11   Use the following frame tags with attributes,

- <frame>
- <frameset>
- <noframe>
- <iframe>.

2.12   Apply cascading style sheets

     2.12.1   Create Inline styles.

     2.12.2   Create embedded style sheets.

     2.12.3   Resolve style conflicts.

     2.12.4   Link external style sheets to a HTML page.

     2.12.5   Place HTML elements at required position.

     2.12.6   Change background colors, images etc.

     2.12.7   Set the properties margin, padding, height, width to an element.

2.13   List the applications of HTML.

3. Create XML file and explain about web servers.

3.1   Create XML file

     3.1.1   Describe the organization of data in the form of XML.

     3.1.2   State the significance of Namespace

     3.1.3   Compare and Contrast DTD and Schema

     3.1.4   Understand the parsing process of XML by DOM and SAX.

     3.1.5   List the applications of XML

3.2   Explain about Web servers

     3.2.1   Distinguish Client-side and Server-side scripting.

     3.2.2   Illustrate the architecture of Web server.

     3.2.3   Identify various HTTP request types and their difference.

     3.2.4   Understand the installation process of IIS, PWS and Apache web servers.

     3.2.5   Compare/Contrast IIS, PWS and Apache.

3.2.6   Describe the steps to place and request HTML, PHP documents from web servers.

4. Implement client side scripting using Java Script.

4.1   Describe the need for client side scripting.

4.2   List various client side scripting languages.

4.3   Use various operators.

4.4   Use **if, if/else** and **switch** conditional statements.

4.5   Use **while**, **do/while** and **for** iterative statements.

4.6   Write small programs using conditional and iterative statements.

4.7   Understand the process of debugging JavaScript code.

4.8   Implement functions

    4.8.1   Define and call a function.

    4.8.2   Illustrate parameter passing.

    4.8.3   List and explain global functions provided by JavaScript.

    4.8.4   Explain the scope and lifetime of variables.

    4.8.5   Write small programs using recursion.

4.9   Implement arrays

    4.9.1   Understand single and multi dimensional arrays.

    4.9.2   Declare an array.

    4.9.3   Manipulate an array.

    4.9.4   Write small programs using arrays.

4.10   List various Objects provided by JavaScript.

5. Implement Server side scripting using PHP.

5.1   Understand the installation of PHP

5.2   Explain the fundamentals of PHP

    5.2.1   Combine HTML and PHP.

    5.2.2   List and explain various Data types with examples.

    5.2.3   Declare variables and constants.

    5.2.4   Use various Operators.

5.3   Implement various loop statements with examples

5.4   Implement various conditional statements with examples

5.5   Understand string manipulation using string functions

5.6   Write small programs using loops and conditional statements

5.7   Implement arrays

5.7.1   Understand single and multi dimensional arrays.

5.7.2   Declare an array.

5.7.3   Manipulate an array.

5.7.4   Write small programs using arrays.

5.8   Implement functions

5.8.1   Define user defined function.

5.8.2   State the importance of user defined function.

5.8.3   Describe the process of passing arguments.

5.8.4   Explain the scope and lifetime of variables.

5.8.5   Write small programs using functions.

5.9   Implement the concept of accessing databases

5.9.1   Understand basic database concepts.

5.9.2   Explain the steps for connecting to a database

5.9.3   List and explain the steps to do the following,

5.9.3.1   Retrieving data from a table.

5.9.3.2   Inserting data into a table.

5.9.3.3   Updating the data in a table.

5.9.3.4   Deleting data from a table.

5.9.4   Write some simple programs to insert, delete, update and retrieve data from database.

5.10   Describe the significance cookie and session

5.10.1   Define Session and Cookie.

5.10.2   State the importance of Session and Cookie.

5.10.3   Create and delete a cookie.

5.10.4   Use query string to pass data.

5.10.5   Understand Session function.

5.10.6   Use session variables.

5.11   Explain the process of debugging PHP code.

COURSE CONTENTS

1. PRINCIPLES OF WEB DESIGN

Anatomy of Web page, Format, Elements, Navigation, Building, Launching and maintaining   web site

2. HTML & CSS

HTML – Introduction, Format of web page, Tags and attributes, Formatting text, Adding images, Positioning. Lists, Colors, Connecting to hyperlinks, Tables, Forms, Frames

CSS – Introduction, Inline styles, Embedded style sheets, Conflicting styles, Linking external style sheets, Positioning elements, Backgrounds, Element dimensions

3. XML & Web Servers

XML – Introduction, Structuring Data, XML Namespaces, DTD and Schemas, Document Object Model (DOM), Simple API for XML (SAX), Applications of XML

Web Servers – Introduction, HTTP Request Types, System Architecture, Client-Side versus Server-Side Scripting, Accessing Web Servers, IIS, PWS, Apache, Requesting HTML, PHP documents

4. JAVA SCRIPT

Introduction to Scripting, Operators, Conditional Statements, Iterative Statements, Debugging
Functions – Function definitions, Duration of Identifiers, Scope rules, Global functions, Recursion
Arrays – Declaring and allocating arrays, References and reference parameters, Passing arrays to functions, Sorting and Searching arrays, Multiple-Subscripted arrays
Objects – **Math** object, **String** object, **Date** object, **Boolean** and **Number** object.

4. PHP

Fundamentals of PHP, Loops, Strings, Statements, Arrays, Functions, Databases, Cookies, Sessions, Debugging

REFERENCE BOOKS

1) Principles of Web Design   --   Sklar, TMH
2) HTML complete reference   --   Powell, THH
3) Internet & World Wide Web   --   Dietel & Dietel, Pearson education
4) Straight to the point PHP   --   Laxmi Publications
5) Basics of Web Site Design   --   NIIT – PHI
6) WWW Design with HTML   --   Xavier (TMH)

DATA STRUCTURES THROUGH C++ LAB

Subject Title   : **Data Structures through C++ Lab**

Subject Code   : **CM – 407**

Periods per Week   : **03**

Periods per Semester : **45**

LIST OF EXERCISES

1. Exercises on creation, insertion, deletion & display of elements in a singly linked lists
2   Write a program to implement a singly circular linked list
3. Exercises on creation, insertion, deletion & display of elements in a doubly linked lists
4. Exercises on searching, sorting, reverse the elements of a given single linked list.
5. Write a program to Implement a stack
6. Write a program to implement a queue
7. Write a program to create a binary tree & its traversal operations
8. Exercise on Selection sort
9. Exercise on insertion sort
10. Exercise on bubble sort
11. Implement a program for merge sort on two sorted lists of elements
12. Exercises on linear search
13. Exercise on binary search

OBJECTIVES AND KEY COMPETENCIES

Sl.No	Name of the Experiment	Objectives	Key Competencies
1	Exercises on creation, insertion, deletions & display of elements in a singly linked lists	Write a C++ program for i. Creation of linked list ii. Inserting an element in Linked list iii. Check for deletion of a node if no element is present and print error message iv. Delete an element from the Linked list v. Display all the elements from the linked list	❖ Rectify syntactical errors ❖ Debug logical errors ❖ Study node structure ❖ Validate whether the memory allocation is done for the node ❖ Confirm whether the addition of node is done at the end ❖ Correct if deletion of an element in an empty list ❖ Confirm whether deletion of required node is done ❖ Observe whether all the elements of the linked list are displayed in proper order
2	Write a program to implement a singly circular linked list	Write a C++ program for i. Creation of linked list ii. The last node is pointing to the first node of the list iii. Display all the elements from the Circular linked list	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe node structure ❖ Validate whether the memory allocation is done for the node ❖ Validate whether the last node is pointing to the first node of the linked list ❖ Compare whether linked list and circular linked list is properly understood
3	Exercises on creation, insertion, deletions & display of elements in a	Write a C++ program for i. Creation of double linked list ii. Traversal of nodes is	❖ Rectify syntactical errors ❖ Debug logical errors ❖ Observe node structure ❖ Validate whether the memory

		OBJECTIVES AND KEY COMPETENCIES	
Sl.No	Name of the Experiment	Objectives	Key Competencies
	doubly linked lists	properly done in bi-direction iii. Display all the elements from either directions from the node iv. Insertion of a new node in the existing list vi. Check for deletion of a node if no element is present and print error message v. Deletion of the required node in the double linked list	allocation is done for the node ❖ Verify whether the nodes are properly pointing to the previous and next nodes ❖ Verify whether the traversal is done from both directions ❖ Verify whether a new node is properly inserted in the double linked list ❖ Observe proper traversal of the list through newly inserted node in the existing list ❖ Correct if deletion of an element in an empty double linked list ❖ Proper traversal of the list after deletion of node in the existing list
4	Write a program to Implement a stack	Write a C++ program for i. Creation of Stack consisting of elements using arrays ii. Insertion of new element is done by push() function call iii. Deletion of last element is done by pop() function call iv. Print error message for 'empty stack' if no elements are present for pop() function call v. Print error message for 'stack full' if number of elements exceed size of Stack array	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe declaration of stack using arrays ❖ Validate whether a new element is inserted at the top by push() function call ❖ Check whether only the top element is deleted by pop() function call ❖ Verify for empty stack condition in pop() ❖ Verify for stack full condition in push()

OBJECTIVES AND KEY COMPETENCIES

Sl.No	Name of the Experiment	Objectives	Key Competencies
5	Write a program to implement a queue	Write a C++ program for i. Creation of Queue consisting of elements using arrays ii. Insertion of new element is done by add_Queue() iii. Print error message for 'empty queue' if no elements are present for deletion of an empty queue. iv. Print error message for 'queue full' if number of elements exceed size of Queue array upon insertion of new element. v. Deletion of first element is done by delete_Queue()	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe declaration of Queue using arrays ❖ Validate whether a new element is inserted at the end of the array by add_Queue() ❖ Verify for empty Queue condition for deletion of an element ❖ Verify for Queue full condition upon insertion of a new element ❖ Check whether only the first element is deleted by delete_Queue()
6	Write a program to create a binary tree & its traversal operations	Write a C++ program for i. Creation of Binary Trees ii. Creation of elements at proper levels iii. Insertion of a node iv. Perform In-order Traversal of the binary tree v. Perform Pre-order Traversal of the binary tree vi. Perform Post-order Traversal of the binary tree	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe proper definition of elements in a Binary Tree ❖ Check whether the node is properly inserted in the Binary Tree ❖ Validate whether the Tree in-order traversal is properly done ❖ Validate whether the Tree pre-order traversal is properly done ❖ Validate whether the Tree post-order traversal is properly done

		OBJECTIVES AND KEY COMPETENCIES	
Sl.No	Name of the Experiment	Objectives	Key Competencies
7	Exercise on Selection sort	Write a C++ program for i. Implementing selection sort ii. Printing the list after selection sort is performed	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe whether selection sort algorithm is properly implemented ❖ Check whether the sorted list is generated after the selection sort is performed for the given unordered list
8	Exercise on insertion sort	Write a C++ program for i. Implementing insertion sort ii. Printing the list after insertion sort is performed	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe whether insertion sort algorithm is properly implemented ❖ Check whether the sorted list is generated after the insertion sort is performed for the given unordered list
9	Exercise on bubble sort	Write a C++ program for i. Implementing Bubble sort ii. Printing the list after insertion sort is performed	❖ Correct syntactical errors ❖ Debug logical errors ❖ Observe whether Bubble sort algorithm is properly implemented ❖ Check whether the sorted list is generated after the Bubble sort is performed for the given unordered list ❖ Check the efficiency of the program if the given list is almost sorted
10	Implement a program for merge sort on two sorted lists of elements	Write a C++ program for i. Implementing merge sort ii. Printing the list after merge sort is performed	❖ Correct syntactical errors ❖ Debug logical errors ❖ Check whether two separate sorted lists are properly stored in separate arrays ❖ Observe whether Merge sort algorithm is properly implemented

Sl.No	Name of the Experiment	Objectives	Key Competencies
			OBJECTIVES AND KEY COMPETENCIES
			❖ Check whether the sorted list is generated after the Merge sort is performed for the given two separate lists
11	Exercises on linear search	Write a C++ program for i. Implementing Linear Search ii. Print the proper result for successful and unsuccessful search	❖ Correct syntactical errors ❖ Debug logical errors ❖ Check whether Linear Search algorithm is properly implemented ❖ Observe the result for the search element is present in the list ❖ Observe the result for the search element is not present in the list
12	Exercise on binary search	Write a C++ program for i. Implementing Binary Search ii. Print the proper result for successful and unsuccessful Binary search	❖ Correct syntactical errors ❖ Debug logical errors ❖ Check whether Binary Search algorithm is properly implemented ❖ Observe the result for the search element is present in the list ❖ Observe the result for the search element is not present in the list
13	Exercise on Sparse matrix	Write a C++ program for i. Converting an ordinary matrix to sparse matrix ii. Transpose of a sparse matrix	❖ Correct syntactical errors ❖ Debug logical errors ❖ Check whether sparse matrix is properly generated ❖ Observe the result

MICROPROCESSORS LAB

Subject Title   :   **Microprocessors Lab**

Subject Code   :   **CM - 408**

Periods per Week   :   **03**

Periods per Semester :   **45**

LIST OF EXPERIMENTS

1. Write an assembly language program to perform arithmetic operations on two 16-bit numbers.
2. Write an assembly language program to add two BCD numbers.
3. Write an assembly language program to generate first 'n' even numbers
4. Write an assembly language program to implement searching on an array.
5. Write an assembly language program to sort the numbers in an array
6. Write an assembly language program to find the factorial of a number.
7. Write an assembly language program to find reverse of a given number
8. Write an assembly language program to count even & odd numbers in an array
9. Write an assembly language program to find sum of digits in a given number
10. Write an assembly language program to manipulate strings.
11. Write an assembly language program to implement pattern matching.
12. Write an assembly language program to move data from one location to another location.
13. Write a program for generating multiplication table for a given number
14. Write an assembly language program to count number of ones and zeros in a number.
15. Write an assembly language program to find sum of numbers given in an array

OBJECTIVES AND KEY COMPETENCIES

Exp. No.	Name of the experiment	Objectives	Key Competencies
1	Write an assembly language program to perform arithmetic operations on two 16-bit numbers.	Write an assembly language program and perform arithmetic operations like addition, subtraction, multiplication and division on two 16-bit numbers.	1) Understand the execution process of assembly language program. 2) Identify the registers required to store the data. 3) Use appropriate statements for each operation 4) Write the code. 5) Run the program and test the results. 6) Resolve the errors if any through debugging.
2	Write an assembly language program to add two BCD numbers.	Write an assembly language program to perform addition on two BCD numbers of various lengths.	1) Identify the registers required to store the data. 2) Use statements to perform addition. 3) Write the code. 4) Run the program and test the results. 5) Resolve the errors if any through debugging.
3.	Write an assembly language program to generate first 'n' even numbers	Write an assembly language program to generate first 'n' even numbers given 'n' value as input	1) Identify the registers required to store the data. 2) Use statements to perform division & comparison. 3) Write the code. 4) Run the program and test the results. 5) Resolve the errors if any through debugging
4	Write an assembly language program to implement searching on an array.	Write an assembly language program to implement searching like finding the largest number in an array.	1) Identify the registers/memory locations required to store the data. 2) Use instructions like JMP. 3) Write the code. 4) Run the program and test the results. 5) Resolve the errors if any through debugging.

5	Write an assembly language program to sort the numbers in an array	Write an assembly language program to implement sorting on an array like sorting 8-bit numbers in ascending order.	1) Identify the registers/memory locations to store the data. 2) Write the code using JMP, CALL, PROC etc. 3) Run the program and test the results. 4) Resolve the errors if any through debugging.
6	Write an assembly language program to find the factorial of a number.	Write an assembly language program to find the factorial of a number of different lengths like 8-bit, 16-bit etc	1) Identify the registers required to store the data. 2) Use instructions like JMP, subroutines etc 3) Write the code. 4) Run the program and test the results. 5) Resolve the errors if any through debugging.
7	Write an assembly language program to find reverse of a given number	Write an assembly language program to find reverse of a given number	1) Identify the registers required to store the data. 2) Use instructions like shift 3) Write the code. 4) Run the program and test the results. Resolve the errors if any through debugging.
8	Write an assembly language program to count even & odd numbers in an array	Write an assembly language program to count even & odd numbers in an array	1) Identify the registers required to store the data. 2) Use instructions like DIV and CMP 3) Write the code. 4) Run the program and test the results. Resolve the errors if any through debugging.
9	Write an assembly language program to find sum of digits in a given number	Write an assembly language program to find sum of digits in a given number	1) Identify the registers required to store the data. 2) Use logical instructions to mask bits 3) Write the code. 4) Run the program and test the results. Resolve the errors if any through debugging.
10	Write an assembly language program to manipulate string.	Write an assembly language program to manipulate strings like reversal, concatenation	1) Identify the registers required to store the data. 2) Write the code. 3) Run the program and test the results.

11	Write an assembly language program to implement pattern matching	Write an assembly language program to implement pattern matching like searching for a given string in a paragraph.	1) Identify the registers required to store the data. 2) Write the code using registers like DI, SI 3) Run the program and test the results. 4) Resolve the errors if any through debugging.
12	Write an assembly language program to move data from one location to other.	Write an assembly language program to move data of various lengths from one location to other.	1) Identify the registers to move the data. 2) Write the code. 3) Run the program and test the results.
13	Write an assembly language program for generating multiplication table for a number.	Write an assembly language program for generating multiplication table for a number up to 10 multiplication factors.	1) Identify the registers required to store the data. 2) Write the code using loop statements. 3) Run the program and test the results. 4) Resolve the errors if any through debugging.
14	Write an assembly language program to count number of ones and zeros in a number.	Write an assembly language program to count number of ones and zeros in a number of 8-bit/16-bit.	1) Identify the registers required to store the data. 2) Write the code. 3) Run the program and test the results. 4) Resolve the errors if any through debugging.
15	Write an assembly language program to find sum of numbers given in an array	Write an assembly language program to find sum of numbers given in an array	1) Identify the registers required to store the data. 2) Write the code using loop statements 3) Run the program and test the results. Resolve the errors if any through debugging

.NET Programming Lab

Subject Title   : .NET Programming Lab

Subject Code   : CM – 409

Periods per Week   : 03

Periods per Semester   : 45

LIST OF EXERCISES using C#

1. Exercise on all basic controls in designing forms.

2. Design a calculator using appropriate commands.

3. Exercise on menus at design time and run time.

4. Exercise on modifying and deleting menu items.

5. Develop a project using arrays and control statements.

6. Develop a project using recursive concept.

7. Exercise on Line and Shape Controls.

8. Exercise on console application which accept two argument from the user and returns four output values as sum, difference, product and quotient of those two arguments.

9. Develop a calculator windows application.

10. Exercise on web forms using appropriate control elements.

11. Design a student details web form.

12. Exercise on web forms using images , hyperlinks.

13. Exercise on data accessing in ADO.NET with multiple tables.

14. Develop a student web application, connect to database.

    a) Retrieve student details and display in web form.

    b) Retrieve student marks. Calculate percentage display the result in tabular form.

Name of the Experiment	Objectives	Key Competencies
Exercises on designing forms	Learning forms of i. .NET Framework ii. Visual Studio IDE iii. Help System	❖ Study the creation of forms ❖ Validate whether the memory allocation ❖ Study the basics of IDE and help system ❖ Familiar with Framework.
Exercises on menu items	Write procedure for i. Creation of Menus ii. Managing Menus	❖ Validate whether the memory allocation is done ❖ Study of Menu items ❖ Analysis of menus at designing time and run time
Exercises on C# Programming, Graphical controls Web forms ADO.NET	Write a program for i. Using C# control statements ii. Graphical controls iii. Web Forms iv. ADO.NET	❖ Analysis of Memory availability ❖ Study the syntax of C# programming commands and control statements. ❖ Study the concepts of various line and shape controls ❖ Study creating and executing console applications. ❖ Study data accessing in ADO.NET with multiple tables. ❖ Familiar in developing websites using web forms, images and hyperlinks. ❖ Learning data base connection to the .net application. ❖ Case study on student details.

WEB DESIGNING LAB

Subject Title : **Web Designing Lab**

Subject Code : **CM - 410**

Periods per Week : **04**

Periods per Semester : **60**

LIST OF EXPERIMENTS

1. Create a HTML page that uses the tags like head, title, body etc.

2. Create a HTML page that uses frames and different presentation formats, colors.

3. Create a HTML page with a table consisting of a header, body and footer.

4. Create a HTML page with a form containing various controls.

5. Create a style sheet to set the background color, position and dimensions of a HTML element.

6. Create a simple XML file that contains student data.

7. Write JavaScript code using arithmetic operators.

8. Write JavaScript code to implement sorting.

9. Write JavaScript code that uses recursion.

10. Write JavaScript code that displays date in various formats.

11. Write PHP program using arithmetic operators.

12. Write PHP program to implement searching.

13. Write PHP program to perform various operations on a database table using functions.

14. Write a PHP program to set a cookie.

OBJECTIVES AND KEY COMPETENCIES

Exp. No.	Name of the experiment	Objectives	Key Competencies
1	Create a HTML page that uses the tags like head, title, body etc.	Create the HTML page with a title and some content in the body.	1) Identify the editor required for writing HTML 2) Add the tags with relevant content 3) Save the file 4) Open the file in a browser 5) Test the results
2	Create a HTML page that uses frames and different presentation formats, colors.	Create the HTML page with multiple frames so that content in each frame will have different format and colors.	1) Identify the tags for creating multiple frames 2) Add some content to the frames and use different formats, colors for each frame. 3) Save the file 4) Open the file in a browser 5) Test the results
3	Create a HTML page with a table consisting of a header, body and footer.	Create the HTML page with a table and that table should have a header, body and footer.	1) Identify the tags for creating the table 2) Add header, body and footer to the table. 3) Put some content in each section of table 4) Save the file 5) Open the file in a browser 6) Test the results
4	Create a HTML page with a form containing various controls.	Create the HTML page with a form and add some controls like textbox, label to the form.	1) Identify the tags to add a form and controls 2) Add the form and put some controls in it. 3) Save the file 4) Open the file in a browser 5) Test the results
5	Create a style sheet to set the background color, position and dimensions of a HTML element.	Create a style sheet which contains selectors to set the background color, position and dimensions of a HTML element.	1) Identify the editor required for creating CSS 2) Add selectors to set the background color, position and dimensions of an element. 3) Save the CSS file 4) Link the CSS file to a valid HTML page. 5) Save the HTML page 6) Open the HTML page in a browser 7) Test the results

6	Create a simple XML file that contains student data.	Create an XML file with some student information.	1) Identify the information to put in the XML file 2) Identify the editor for creating XML file 3) Add relevant tags and put the content 4) Save the XML file. 5) Open the XML file in a browser which had XML parsing capability. 6) Test the result and verify the information.
7	Write JavaScript code using arithmetic operators.	Write JavaScript code using arithmetic operators like calculation of simple interest.	1) Understand the significance of Client-side scripting. 2) Understand the process of combining JavaScript and HTML. 3) Create a HTML file. 4) Add HTML elements to read Principal, Rate of interest, Time period and to calculate Simple interest. 5) Write the logic for calculating Simple interest 6) Save the HTML file. 7) Open the HTML page in a browser 8) Test the results 9) Resolve the errors if any through debugging
8	Write JavaScript code to implement sorting.	Write JavaScript code to implement sorting like reading an array of 'n' numbers and sorting them in ascending order.	1) Create a HTML file 2) Add elements to read array and to sort. 3) Write the logic for sorting using iterative and conditional statements. 4) Save the HTML file. 5) Open the HTML page in a browser 6) Test the results 7) Resolve the errors if any through debugging

9	Write JavaScript code that uses recursion	Write JavaScript code that uses recursion like calculation of the factorial.	1) Create a HTML file 2) Add elements to read number and to calculate factorial. 3) Write the logic using recursion 4) Save the HTML file. 5) Open the HTML page in a browser 6) Test the results 7) Resolve the errors if any through debugging
10	Write JavaScript code that displays date in various formats.	Write JavaScript code that display date in various formats like DD-MM-YYYY, DD/MM/YYYY etc.	1) Create a HTML file 2) Write the logic to display date information 3) Save the HTML file. 4) Open the HTML page in a browser 5) Test the results
11	Write PHP program using arithmetic operators.	Write PHP program using arithmetic operators like calculation of radius of a circle	1) Understand the differences between server side and client side scripting. 2) Understand the process of installing PHP and requesting documents from web server. 3) Understand the process of combining PHP and HTML. 4) Create a PHP file 5) Add elements to read radius and to calculate area. 6) Write the logic using operators. 7) Save and Run the page. 8) Test the results 9) Resolve the errors if any through debugging

12	Write PHP program to implement searching.	Write PHP program to implement searching like reading an array of 'n' numbers and finding smallest among them.	1) Create a PHP file. 2) Add elements to read array and to find the smallest number. 3) Write the logic for sorting using iterative and conditional statements. 4) Save and Run the page. 5) Test the result
13	Write PHP code to perform various operations on a database table using functions.	Write PHP code to perform retrieval, insertion, modification and deletion of data in a database table using functions	1) Understand the process of connecting to database and execute commands. 2) Create a PHP file. 3) Add required elements to the page. 4) Write the logic to retrieve, insert, update and delete data in the table using functions. 5) Save and Run the page. 6) Test the result
14	Write a PHP program to set a cookie.	Write PHP code to create a cookie and put some information in it.	1) Understand the significance of cookies. 2) Create a PHP file. 3) Write the logic to create and set a cookie 4) Save and Run the page. 5) Test the result.

V SEMESTER

INDUSTRIAL MANAGEMENT AND ENTREPRENEURSHIP

Subject Tit   :*Industrial Management And Entrepreneurship*

Subject Code   :**CM–501**

Periods/Week   :**05**

Periods per Semester :75

TIME SCHEDULE

S. No.	Major Topics	Periods	Weightage Of Marks	Short Answer Questions	Essay Type Questions
1.	Principles and functions of Management	5	08	01	½
2.	Organisation structure & organisational behaviour	14	21	02	1 ½
3	Production Management	10	13	01	01
4.	Materials Management	10	16	02	01
5.	Marketing ,Sales & Feasibility study	10	13	01	01
6.	Industrial legislation & safety	08	13	01	01
7.	Introduction to ISO 9000 & T.Q.M.	08	13	01	01
8	Role of Enterprenuer and Enterprenuerial Development	10	13	01	01
	Total	75	110	10	08

OBJECTIVES

On completion of the course the student will be able to

1.0   Understand the principles of management as applied to industry.

1.1   Define industry, commerce (Trade) and business.

1.2   Know the need for management.

1.3   Understand the evolution of management

1.4   Explain the principles of scientific management.

1.5   Understand functions of Management.

1.6   Differentiate between management and administration.

2.0 **Know types of ownerships, the organisation structure of an industry and the behaviour of an individual in an organisation.**

    2.1   Understand types of ownerships

    2.2   Differentiate types of ownerships.

    2.3   Understand salient features of joint stock companies.

    2.4   Understand the philosophy and need of organisation structure of an industry.

    2.5   Understand the line, staff and Functional organisations.

    2.6   List the advantages and limitations of line, staff and functional organisations.

    2.7   List different departments in a large scale industry.

    2.8   Explain the factors of effective organisation.

    2.9   Understand organisational behaviour.

    2.10   Conduct for analysis.

    2.11   Assess the incurring applicants.

    2.12   Outline the selection process.

    2.13   Understand the sources of manpower.

    2.14   State motivation theories.

    2.15   State Maslow's Hierarchy of needs.

    2.16   List out different leadership models.

    2.17   Explain the trait theory of leadership.

    2.18   Explain behavioural theory of Leadership.

    2.19   Explain the process of decision Making.

    2.20   Outline the communication process.

3.0 **Understand the different aspects of production management.**

    3.1   Differentiate and integrate production, planning and control.

    3.2   Relate the production department with other departments.

    3.3   State the need for planning and it's advantages.

    3.4   Explain the stages of Production, planning and control.

    3.5   Explain routing methods.

    3.6   Explain scheduling methods.

    3.7   Explain dispatching.

    3.8   Draw PERT/CPM networks.

    3.9   Identify the critical path.

4.0 **Understand the role of materials management industries.**

    4.1   Explain the role of the materials in Industry.

4.2   Derive expression for inventory control.

4.3   Explain ABC analysis.

4.4   Define safety stock.

4.5   Define reorder level.

4.6   Derive an expression for economic ordering quantity.

4.7   Explain stock layout.

4.8   List out stores records.

4.9   Explain the Bin card.

4.10   Describe Cardex method.

4.11   Explain purchasing procedures.

4.12   List out purchase records.

4.13   Describe the stores equipment

4.14   **Understand marketing, sales and feasibility study.**

4.15   Explain marketing functions.

4.16   Explain Sales function.

4.17   List out market conditions.

4.18   Differentiate Sellers and Buyers' market.

4.19   Differentiate monopoly, oligarchy, and perfect competition.

4.20   Conduct market and demand surveys.

4.21   Differentiate product and production analysis.

4.22   Identify the input materials, i.e. Bill of materials

4.23   Explain the concept of cost.

4.24   List out the elements of cost.

4.25   Explain the concept of contribution.

4.26   Explain break-even analysis.

4.27   Define the main policy requirements.

4.28   Decide the location.

4.29   Evaluate Economic and Technical factors.

4.30   Preparation of feasibility study.

4.31   List out different products currently in demand with market or industry.

5.0   Comprehend the provisions of industrial legislation in India. & Safety procedures

5.1   Describe employer and employee relations.

5.2   Describe the mechanics of Trade Unions.

5.3   Describe mechanics of settlement of in outs.

5.4   Explain the significance of collective bargain.

5.5   List out Welfare activities.

5.6   List out subsidy schemes.

5.7   Explain the total welfare concept.

5.8   List out the rights and responsibilities of employees and employers.

5.9   List out the salient features of Indian Factories Act.

5.10   Explain the importance of safety at Work place.

5.11   List out the important provisions related to safety.

5.12   Explain the significance and mechanics of safety education.

5.13   Explain hazard and accident.

5.14   List out different hazards in the Industry.

5.15   Explain the causes of accidents.

5.16   Explain the direct and indirect cost of accidents.

5.17   List out provisions of Indian Electricity Rules laid in the electricity
         act1923.

6.0   Understand ISO 9000 & TQM.

6.1   Understand the concept of quality.

6.2   Know the quality systems and elements of quality systems.

6.3   Know the principles of quality Assurance.

6.4   Know the Indian Standards on quality systems.

6.5   Know the evolution of ISO standards.

6.6   Discuss ISO standards and ISO 9000 series of quality systems.

6.7   State the constituents of ISO 9000 series of standards for quality   systems.

6.8   State the outstanding features and drawbacks of ISO 9000 series of standards.

6.9   List the beneficiaries of ISO 9000.

6.10   Understand 5-S principles and ZERO DEFECT.

**7.0   Understand the role of entrepreneur in economic development and in improving
         the quality of life.**

7.1   Outline the concepts of Entrepreneurship.

7.2   Define the word entrepreneur.

7.3   Determine the role of Entrepreneurship.

7.4   Describe the profile of an entrepreneur.

7.5   Explain the requirements of an entrepreneur.

7.6   Outline the expectations of Entrepreneurship.

7.7   Determine the role of entrepreneurs in promoting Small Scale Industries.

7.8   Describe the details of self-employment schemes.

7.9   Explain the importance of TS-IPASS.

7.10   List salient features of TS-IPASS.

7.11   Explain the method of product selection.

7.12   Explain the method of site selection.

7.13   Outline the method of plant layout.

7.14   List the financial assistance programmes.

7.15   List out the organisations that help an entrepreneur.

COURSE CONTENTS

1.   **Principles and functions of management.**

Definitions of Industry, Commerce and Business. Evolution of management theories. Principles of Scientific Management, functions of management. Difference of administration and management.

2.   **Organisation Structure & organisational behaviour.**

Role of industry, Types of ownership – Sole proprietorship, Partnership, Private limited, Public limited company, Industrial Cooperatives, Philosophy, types of Organisations, Line and Staff and functional organisations. Advantages and limitations, departments in a large scale industry. Effective organisation. Job analysis, Assessing applicants, selection, motivation, different theories, Leadership in organisation, decision making, communication,

3.   **Production Management.**

Production, planning and control, relation with other departments, need for planning and its advantages, Routing, scheduling, despatching, PERT and CPM, simple problems.

4.   **Materials Management.**

Materials in industry, inventory control model, ABC Analysis, Safety stock, re-order, level, Economic ordering quantity, Stores layout, stores equipment, Stores records, purchasing procedures, purchase records, Bin card, Cardex.

5.   **Marketing, Sales & Feasibility Study**

Sellers and Buyers markets, Marketing, Sales, Market conditions, monopoly, oligarchy, perfect competition, Pricing Policies. Cost Elements of Cost, Contribution, Break even

analysis, Market Survey, Product and production Analysis, Materials input, Manpower, Location, Economic and Technical Evaluation, preparation of Feasibility study reports, - different products – Mechanical, Electrical, Electronics, consumer items, Consumer desires etc.

6. **Industrial Legislation & safety.**

Employer – Employee relations, Trade, Union Settlement of disputes, collective bargaining, Welfare activities, subsidies, Total Welfare concept, rights and responsibilities and Employers and employees. Salient features of Indian Factories Act, Important of Safety at work places, factories Act- Provisions, Safety Education, Hazards, causes of accidents, Cost of accidents, Indian Electricity rules.

7. **Introduction to ISO 9000 and TQM.**

Concept of quality discussed by B. Crosby W. Edward, Deming, Shigco Shingo.

Quality systems – Definitions of the terms used in quality systems like, quality policy, quality management, quality systems, quality control and quality assurance.

Elements quality systems : Management responsibility, Quality system, contract review, design control, document control, purchasing, purchaser – supplied product, product identification and traceability, process control, Inspection and testing.

Principles of quality assurance – Definition of quality assurance.

Indian standards on quality systems – Main features of IS 13999 : 1990, IS 14000 : 1990, IS 14004 : 1990, IS 14001: 1990, IS 14002 : 1990, IS 14003: 1990.

Know the necessity of International standards – Evolution of ISO. **5-S** principles – importance – meaning – approach – benefits

Various standards under ISO – Outstanding features of ISO 9000 series of standards – ISO 9000 Phenomenon ISO 9000 series of quality systems – Constituents of ISO 9000 series of standards for quality systems.

Drawbacks of ISO 9000 series of standards, list the beneficiaries of ISO 9000 (Whom does ISO 9000 help).

8. **Role of Entrepreneur & Entrepreneurial Development.**

Concept, definition, role, expectation, entrepreneurship Vs Management, promotion of S.S.I. Self – employment schemes. The importance and salient features of TS-IPASS.

Product selection, site selection, plant layout, profile and requirement, Institutional support needed, financial assistance programmes.

REFERENCE BOOKS

1.   Industrial Engineering and Management   -by O.P Khanna

2. Production Management- by Buffa.

3. Engineering Economics and Management Science - by Banga & Sharma.

4. S.S.I Hand Book by S.B.P. Publishers.

5. Personnel Management by Flippo.

6. Entrepreneurship – by NITTT&R, Chennai.

Java Programming

Subject Title	:	Java Programming
Subject Code	:	CM - 502
Periods per Week	:	05
Periods per Semester	:	75

TIME SCHEDULE

Unit No.	Major Topic	No. of periods	Weightage of marks	Short Type	Essay type
1	Java basics, usage of classes and objects	22	26	2	2
2	Inheritance and Interfaces	13	21	2	1 ½
3	Packages and Exception Handling	13	21	2	1 ½
4	Multithreaded Programming	13	21	2	1 ½
5	Database connectivity using JDBC driver interface	14	21	2	1 ½
	Total	**75**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the course the student shall be able to:

1.0 Know Java basics, usage of classes and objects.

1.1 Explain the history and features of Java

1.2 Understand byte code of Java and JVM

1.3 Understand the process of entering and executing a Java program

1.4 Know about comment and key words in Java

1.5 Know about Unicode and naming system in Java

1.6 List and explain basic data types of Java.

1.7 Explain Java literals.

1.8　　Declare and initialize variables.

1.9　　Perform type conversion and casting features.

1.10　Use one-dimensional and two–dimensional array.

1.11　Explain various types of operators.

1.12　Write the syntax of selection statements of Java.

1.13　Write the syntax of iteration statements of Java.

1.14　Write the syntax of jump, break, and continue statements.

1.15　Create classes and objects.

1.16　Use new operator and methods.

1.17　List and explain various types of constructors.

1.18　Explain method overloading.

1.19　Use of 'this' pointer.

1.20　Explain the working of static and final.

1.21　Explain string classes and methods.

1.22　Use command-line arguments.

Know the concepts of inheritance and interfaces.

2.1　List the types of inheritance.

2.2　Implement inheritance

2.3　Create multi level hierarchy.

2.4　Use 'final' to avoid overriding.

2.5　Explain the concept of Interfaces.

2.6　Define an Interface.

2.7　Write the difference between class and interface.

2.8　Implement interfaces.

2.9　Explain the scope of variables in interfaces.

3.0　Packages and Exception handling.

3.1　Define a package.

3.2　Describe the concept of class path.

3.3　Describe the concept of Access protection.

3.4　Use a class from another class.

3.5　Appreciate the concept of importing packages

3.6   Explain the sources of errors.

3.7   Write the advantages of exception handling.

3.8   Explain how to deal with exceptions.

3.9   Explain the concept of multi-catch statements programs.

3.10   Explain the types of exceptions.

4.0. Know multi threaded programming

4.1   Explain the thread model of Java.

4.2   Explain thread priorities.

4.3   Explain the concept of synchronization.

4.4   Create thread using Thread class.

4.5   Create thread using Runnable interface

4.6   Create multiple threads.

4.7   Describe alive ( ), join ( ), suspend( ), resume( ) methods.

4.8   Explain Inter thread communication.

4.9   Explain deadlock.

5.0   Database connectivity using JDBC driver interface

5.1   Know about JDBC

5.2   Understand JDBC Architecture

5.3   Know about Connection interface and DriverManager class

5.4   List and know about JDBC drivers

5.5   Know about 3 kinds of Statements: Statement, Prepared Statement and Callable
       Statement

5.6   Understand the steps in connecting to database using JDBC

    5.6.1   Know how to establish a connection

    5.6.2   Create a statement

    5.6.3   Execute the query

    5.6.4   Process the ResultSet object

    5.6.5   Close the connection.

5.7   Example programs using JDBC

COURSE CONTENTS

1. **Java basics, usage of classes and objects:** History of Java – Java applets – Applications – Byte codes-literals – comments writing – key words – separators. Data types – declaring variable – scope – life time - type conversions – casting – Arrays. Operators: Types of operators – precedence of operators – selection statements – control statements – jumping statement – break, continue statements, Usage of classes – objects – new – methods – constructors – method overloading, string classes – command line arguments..

2. **Inheritance and Interfaces:** inheritance super class, sub classes – types of inheritance - Multi level hierarchy – overriding – Concept of Interfaces – implementing Interfaces.

3. **Packages and Exception Handling:**
Concept of packages - Importing of packages - Exception handling: Source of errors – error handling – avoiding, handling.

4. **Multithreaded programming**
Define thread – life cycle of thread - Multi threading - Inter thread communication – Dead locks – Thread properties –

5. **Database Connectivity using JDBC driver Interface**
JDBC – JDBC Architecture – Classes, interfaces and drivers related to JDBC – Connecting to database using JDBC

REFERENCE BOOKS

1. The complete reference Java -- Pattrick Naughten, Herbert Schildt
TMH company Limited, New Delhi.
2. Programming in JAVA -- P. Radhakrishna, University Press
3. Programming in Java -- Muthu - Thomson
4. Java Foundations of Programming – NIIT, PHI
5. Programming with Java -- Balagurusamy, TM

COMPUTER HARDWARE & NETWORKING

Subject Title   : **Computer Hardware & Networking**

Subject Code   : **CM-503**

Periods per Week : **04**

Periods per Semester : **60**

TIME SCHEDULE AND BLUEPRINT

S.No	Major topics	No of periods		Weightage of marks	Short type	Essay type
		Theory	Practice			
1	PC Hardware and its Components.	06	2	26	2	½
2	System Board and Mass storage devices	10	2	16	3	3
3	Study of Input and Output Devices	08	2	16	1	1
4	Networking Basics & Topologies	14	1	26	2	1 ½
5	Network Addressing Techniques	13	2	26	2	2
	TOTAL	**51**	**9**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the course the student shall be able to

1.0   Understand PC hardware and its Components.

1.1 Explain PC Hardware and software

1.2 State the importance of BIOS

1.3 Describe the BIOS hardware interaction

1.4   Explain the BIOS functions of (I) POST, (ii) Bootstrap loading

1.5   State the configuration of a general purpose computer (P-IV Compatible) .

1.6 Identify mother board, processor, chipset, SMPS, Disk Drives, RAM,PCI,IDE,ISA slots, mouse ,AGP , Keyboard, monitor, printer, speaker, USB ports, Parallel port, Serial Port, and Modem of the system.

1.7 Identify various cables that connect peripherals to the rear side of system

2.0 System Board and Mass storage devices

2.1   Mother Board

    2.1.1   Explain various motherboards based on the form factor :   such as AT,ATX, micro ATX, mini ATX , Baby AT,BTX,NLX etc

    2.1.2   List various components on motherboard.

    2.1.3.   List the I/O ports available on motherboard

2.2   Processors

    2.2.1   Describe various processors used in the system : INTEL P4, Celeron, XEON, Itanium processors, AMD Athlon .

    2.2.2   Define chipset. Write the components of INTEL chipset 915,945,965, AMD

    2.2.3   State different processor sockets Like ZIF,SEC and PGA.

    2.2.4   Distinguish different processors Like P-IV,P-IV with HT Technology ,Dual core, Core 2 Duo ,Quad core and i-series (i3,i5 and i7).

    2.2.5   List features of above chipset and their advantages

    2.2.6   State the importance of SMPS over linear voltage power supply

    2.2.7   Use connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

2.3   Memories

    2.3.1   Define the static and dynamic RAM.

    2.3.2   Distinguish RAM types - SDRAM, DDR(1-3), Rambus RAM

    2.3.3   Define Cache memory and how it improves the performance of memory.

    2.3.4   Define L1 and L2 cache and their locations.

    2.3.5   Explain the procedure to upgrade RAM capacity of the system by adding additional RAMs

2.4   Mass storage devices

    2.4.1   Give the constructional details and working of a Hard disk Drive

    2.4.2   Explain the importance of jumper settings and give details of it

    2.4.3   Familiarize with hard disk interfacings standards like IDE/SCSI /SATA / PATA

    2.4.4   Give the constructional details of a CD- ROM

    2.4.5   Explain the process of reading and writing of data on various disk drives like CD- ROM,CD- Writer, Combo drive , DVD Drive etc.

    2.4.6   Explain the working of a Pen drive

    2.4.7   Give the specifications of all above storage devices

3.0   Study of Input and Output Devices

Input Devices

3.1   List the various input devices used with a general purpose computer

3.2   the installation of Keyboard

3.3   Discus the principle of working of an optical and opto-mechanical mouse

3.4   Explain the working of flat bed scanner

3.5   Explain the working of a Webcam

3.6   List the important specifications of keyboard, mouse, scanner, webcam.

Output Devices

3.7   Describe the working principle of CRT Monitor

3.8   Describe the working principle of LCD/TFT.

3.9   Describe different categories of printers (Impact and Non-Impact)

3.10   Describe the working principle of Dot matrix printer

3.12   Describe the working principle of inkjet printer

3.12   Describe the working principle of Laser printer

4.0 .   Introduction to Networks and LAN components.

4.1   Understand the Overview of Networking.

4.2   State the Need for Networking.

4.3   Classification of Networks –LAN, MAN, WAN

4.4   List the Hardware and Software Components.

4.5   Various Network Communication Standards.

        4.5.1 OSI Reference Model.

        4.5.2 TCP/IP Reference Model.

4.6   Know about LAN Cables and Connectors, wireless network adapter

4.7   Know about Coaxial Cables, Twisted-Pair Cables, Optical Fiber Cables, and
        Connectors.

4.8   Explain LAN Devices

        4.8.1 Repeaters

        4.8.2 Hubs

        4.8.3 Switches

        4.8.4 Network Interface Cards (NICs)

        4.8.5 Routers (CISCO, DAX, Etc.)

        4.8.6 Modem (56KBPS Internal or External, ADSL Modems etc.)

4.9   Overview of Network Topologies.

4.10   Understand the basic Topologies such as Bus, Ring and Star, Complex
         topologies like Mesh and Hybrid Topologies.

4.11   Know about Gateways.

5.0 . Network Addressing and Management

5.1   Introduction to Network Addressing.

5.2   Know about TCP/IP Addressing Scheme.

      5.2.1 Components of IP Address.

      5.2.2 IP Address Classes.

      5.2.3 IP Subnetting

      5.2.4 Classify the two types of Internet Protocol addressing IPv4 and IPv6 and
          state the need for IPv6.

      5.2.5   Explain classful addressing and classless addressing in IPv4.

      5.2.6   Describe Internet protocol version-6 (IPv6) addressing.

5.3   State the need for protocols in computer networks.

5.4   Know about protocols

      5.4.1 Hyper Text Transfer Protocol (HTTP)

      5.4.2 File Transfer Protocol (FTP)

      5.4.3 Simple Mail Transfer Protocol (SMTP)

      5.4.4 Telnet

5.5   Understand the Overview of Network Management.

5.6   Understand the Model of ISO Network Management

5.7   Understand the Network Monitoring and Troubleshooting.

5.8   Learn about Simple Network Management Protocol (SNMP).

5.9   Explain how SNMP works.

5.10   Know about Remote Monitoring (RMON).

COURSE CONTENTS

1. PC hardware and its Components.

Hardware and software- the BIOS hardware interaction , importance of BIOS, BIOS
functions configuration of a general purpose computer (P-IV Compatible) ,identification
of various components on the motherboard.

2. System Board and Mass storage devices

Mother Board- motherboards based on the form factor : such as AT,ATX, micro ATX, mini ATX , Baby AT,BTX,NLX ,various I/O ports available on the motherboard

Processors- various processors used in the system : INTEL P4, Celeron, XEON, Itanium processors, AMD athelon, chipset,components of INTEL chipset 915,945,965, AMD , processor sockets Like ZIF,SEC and PGA, processors Like P-IV,P-IV with HT Technology ,Dual core, Core 2 Duo ,Quad core and i-series (i3,i5 and i7), features of above chipset and their advantages ,importance of SMPS over linear voltage power supply, connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

RAM- static and dynamic RAM, RAM slots such as SIMM, DIMM, RIMM and their specification

Mass storage devices - Hard disk Drive, jumper settings , hard disk interfacings standards like IDE/SCSI /SATA / PATA, various disk drives CD-ROM,CD- Writer, Combo drive , DVD Drive , Pen drive.

3.0 Study of Input and Output Devices

Input Devices- various input devices used with a general purpose computer, installation of Keyboard, optical and opto mechanical mouse , flat bed scanner, Webcam,

Output Devices- working principle of CRT Monitor ,working principle of LCD/TFT,printers(Impact and Non-Impact) working principle of Dot matrix printer, inkjet printer, Laser printer

4. Introduction to Networks and LAN components

Need for network-Network classification- network standards-Topologies-Network Components- connectors-network devices

5. Network Addressing and Management

Network addressing-Network protocols, Monitoring and Troubleshooting – Remote Monitoring.

REFERENCE BOOKS

1.   Enhanced Guide to Managing   --   Jean Andrews (Thomson)
      And Maintaining Your PC

2.   Basics of Networking   --   NIIT PHI publications

3.   PC Hardware A Beginners Guide   --   Gilster (TMH)

4.   PC Upgrading   --   Stephen Bigelow (TMH)

5.   Trouble Shooting Your PC   --   Stone & poor
6.   Computer Networks   --   Andrew S. Tanenbaum

SYSTEM ADMINISTRATION

Subject Title   :System Administration

Subject Code   :CM – 504

Periods per Week   :05

Periods per Semester   :75

TIME SCHEDULE and BLUE PRINT

S.No	Major Topics	No. of Periods		Weightage Of Marks	Short Type	Essay Type
		Theory	Practice			
1.	Introduction to system administration	07	01	13	1	1
2.	Windows-2008 server environment	11	02	21	2	1 ½
3.	Windows-2008 server administration	13	05	26	2	2
4.	Introduction to LINUX	09	04	16	2	1
5.	LINUX Administration	18	05	34	3	2 ½
	Total	**58**	**17**	**110**	**10**	**8**

Objectives:

On completion of the study of the subject the student should be able to comprehend the following

1.0 Introduction to system administration

1.1 Need for System Administration.

1.2 Responsibilities of System Administrator

1.3 History of Windows and Unix/Linux

     1.3.1 Comparison between Windows and Linux

1.4 Implement Hard drives portioning

1.5 Discuss about various configurations like TCP/IP, DNS, DHCP, Domain, NetBEUI

1.6 Explain System security through firewalls, anti-virus software, passwords.

2.0   Windows-2008 server environment

2.1   Need for Windows server 2008

2.2   Different editions of windows 2008

2.3   Comparison between Windows NT and windows 2008

2.4   Comparison between various versions of Windows 2008server

2.5   List and explain Windows 2008 Server components

2.6   List various Hardware requirements.

2.7   List Major optional services available in Windows 2008 server.

3.0 Windows-2008 server administration

3.1   Analyze the Installation & Configuration of Windows 2008 Server

3.2   Discuss User & Group Managements.

3.3   Analyze the working of Device Manager, Drivers Signing & Signature

3.4   analyze Verification & Managing Ports.

3.5   Implement the Installation, management & Configuration of Printers,

3.6   Discuss Disk Management Tools & Tasks,

3.7   Describe File Systems, User Management.

3.8   Implementing Files and Folder NTFS & Share Permissions.

3.9   Discuss DNS, DHCP, DFS

3.9   Explain Managing Servers Remotely Using Terminal Services (Remote Desktop).

3.10   Describe Remote Access and VPN Overview, Configuring & Implementing Remote Access Server.

3.11   Implementing & Configuring VPN.

3.12   Implementing & Configuring Active Directory Services Forest.

3.13   Implementing Server Roles, Restoring Active Directory.

4.0   Introduction to LINUX

4.1   Introduction to Linux, pre-Installation.

4.2   Analyze Installation of Linux.

4.3   Discuss Desktop Environments, Shells & their Types.

4.4   Familiarization with LINUX editors and commands

4.5   Discuss basic filtering techniques in LINUX

4.5.1 Give the working of filter commands

4.5.2 Discuss the usage of grep, egrep, fgrep.

5.0 LINUX Administration

5.1 Discuss about Managing Users and Groups

5.2 Explain the process of Managing Printers and print job.

5.3 Explaining Browsers, PPP & Time Management using TCP/IP with LINUX.

5.4 Analyze the process of Configuring DHCP in LINUX

5.5 Describe Configuring DNS in LINUX.

5.6 Discuss Samba, NFS, Network Services, Proxies, Configuring Firewall.

5.7 Configuring internet access, sending mail

5.8 Configuring web server.

5.9 Describe Linux Security

5.10 explain the process of Backup of data in Linux

COURSE CONTENTS

1. **Introduction to system administration:**

    Introduction, System Administration, History of System Administration, System Administrator Roles, History of Windows and Unix/Linux, Hard drives (types/partitioning), Networking (TCP/IP, DNS, DHCP, Domain, NetBEUI), System Security (firewalls, anti-virus software, passwords).

2. **Windows-2008 server environment:**

    Need for Windows 2003, Comparison between NT and windows 2003, Server Components, Hardware requirements, Optional services

3. **Windows-2008 server administration:**

    Installation & Configuration of Windows 2008 Server, User group Management, Disk Management, Active Directory, Distributed File system, Remote Terminal Services, Networking with Windows 2008 Server, Domain Name system (DNS), DHCP, Installation of IIS, VPN, Restoring, Domain Security.

4. **Introduction to LINUX:**

    Installation of LINUX, Desktop Environment, Linux editors and commands, filtering techniques.

5. LINUX Administration:

Managing users and groups, managing printers, configuring DHCP , DNS, Network services, Firewalls, Security, backup

Reference Books

1. "Teach Yourself MCS TCP/IP", James F. Causey, Techmedia
2. "Introduction to UNIX and LINUX ",John Muster, TMH Pubs
3. "Linux Administration : a Beginner's Guide", Wale Soyinka, McGraw Hill.

MOBILE APPLICATION DEVELOPEMENT

Subject Title   :   **Mobile Application Development**

Subject Code   :   **CM - 505**

Periods per Week   :   **04**

Periods per Semester   :   **60**

TIME SCHEDULE & BLUE PRINT

Unit No.	Major Topic	No. of periods	Weightage of marks	Short answer questions	Essay questions
1	Introduction to mobile application development	04	3	1	0
2	Smart phone hardware architecture	12	26	2	2
3	Different mobile operating systems	12	26	2	2
4	Programming components of Android	18	29	3	2
5	Developing Android applications using UI controls	14	26	2	2
	Total	**60**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the course the student shall be able to:

1.0 Learn the basics of mobile application development

1.1 Define mobile device

1.2 List different type of mobile devices

1.3 Define mobile application development

1.4 Classify mobile application development : native, web and hybrid

2.0 Understand smart phone hardware architecture

2.1   Define smart phone

2.2   Discuss the evolution of smart phones

2.3   List the key features of smart phone.

2.4   Define System on Chip (SoC)

2.5   List and briefly explain the components of SoC

2.6   List advantages and disadvantages of SoC

2.7   Briefly discuss the features of processor architectures – Traditional DSP Architecture, Modern DSP Architecture, SoC based architecture

2.8   List the contemporary processors

2.9   List different peripheral devices in a smart phone

2.10   Discuss the future technology

3.0 Know the different mobile operating systems

3.1 Define mobile operating system

3.2 List different mobile operating systems

3.3 State in brief the history of iOS

3.4 Draw the block diagram of iOS Architecture

3.5 List the layers in iOS architecture

3.6 Briefly explain the features of different layers of iOS

3.7 State in brief the history of Android OS

3.8 Draw the block diagram of Android OS Architecture

3.9 List the layers in Android OS architecture

3.10   Briefly explain the features of different layers of Android OS

3.11   Compare iOS and Android OS

4.0 Understand the programming components of Android

4.1 Know the different versions of Android

4.2 List the programming languages used for developing Android applications.

4.3 Know the Concepts of MVC Architecture.

4.4 Know the Security Aspects of Android.

5.3.5   Radio Button

5.3.6   Toggle button

5.3.7   Spinner

5.3.8   Date picker

5.3.9   Time picker

5.4   Develop an Android application that switches between Activities

5.5   Develop simple Android applications using UI controls

COURSE CONTENT

1. **Introduction to mobile application development**

   Define a mobile device - different type of mobile devices - Define mobile application development – different types of mobile application development : native, web and hybrid.

2. **Smart phone hardware architecture**

   Define smart phone - The evolution of smart phones - Key features of smart phone - Define System on Chip (SoC) – The components of SoC - Advantages and disadvantages of SoC - Features of processor architectures – Traditional DSP Architecture, Modern DSP Architecture, SoC based architecture - The contemporary processors - Different peripheral devices in a smart phone - Future technology.

3. **Different mobile operating systems**

   Mobile operating system - different mobile operating systems - State in brief the history of iOS - Block diagram of iOS Architecture - Layers in iOS architecture - Features of different layers of iOS. History of Android OS - Block diagram of Android OS Architecture - Layers in Android OS architecture - Features of different layers of Android OS - Compare iOS and Android OS.

4. **Programming components of Android**

   The different versions of Android - The programming languages used for developing Android applications. – MVC Architecture – Security Aspects - Android Environment Setup using Android Studio IDE - The Android Environment Setup using Eclipse IDE - The Programming Components of Android – Activities, Services, Content Providers, Broadcast Receivers, Android Activating component: Intent, Calling a Number, Switching between Activities - The procedure to create "Hello world!" app - The Creation of Android new application - The Anatomy of Android application - Main Activity file, Manifest file, R

file, Strings file, The layout file, Running the Android application - The usage of Toast message.

5. **Developing Android applications using UI controls**

The lifecycle of Android Activities - Activity Callback functions - User Interface Designing Layouts - Relative Layout, Linear Layout, List View Layout, Grid view Layout - The usage of User Interface Controls – Textbox, Edit Text, Button, Checkbox, Radio Button, Toggle button, Spinner, Date picker, Time picker - Develop an Android application that switches between Activities - Develop simple Android applications using UI controls.

REFERENCES

1. Today's Smartphone Architecture by Malik Wallace and Rafael Calderon - meseec.ce.rit.edu/551-projects/spring2016/2-6.pdf
2. https://**cs4720**.cs.virginia.edu/slides/**CS4720**-**MAD**-iOSAppComponents.pdf
3. http://www.javatpoint.com/android-tutorial

SOFTWARE ENGINEERING

Subject : **Software Engineering**

Subject code : **CM – 506 A**

Periods per Week : **05**

Periods per semester : **75**

TIME SCHEDULE & BLUE PRINT

S.No	Major topic	No.of Periods		Weightage of marks	Short type	Essay type
		Theory	Practice			
1	Introduction & Software Life Cycle Models	13	0	13	1	1
2	Software Project Management	18	2	29	3	2
3	Requirement Analysis and Specification	11	0	16	2	1
4	Software Design, Coding & Testing	21	2	39	3	3
5	Reliability and Quality Management & Maintenance	08	0	13	1	1
	Total	**71**	**4**	**110**	**10**	**8**

OBJECTIVES

On completion of the study of the subject the student should be able to comprehend the following

1.0 Understand the basics of Software Engineering Design & Life Cycle Models

1.1 Know the Evolution and Impact of the Software Engineering

1.1.1 Evolution of an Art to an Engineering Discipline

1.1.2 A Solution to the Software Crisis

1.2 Know the difference between Programs and Software Products

1.3 Understand the evolution of Software Engineering Design

1.3.1 Early Computer Programming

1.3.2 High Level Language Programming

4.5.1 Coding Standards and Guidelines - Code Review- Code Walk-Throughs - Code Inspection.

4.5.2 Clean Room Testing - Software Documentation- Software Testing

4.5.3 Know What is Testing?

4.5.4 Differentiate Verification and Validation -

4.5.5 List 3 Designs of Test Cases –

4.5.6 Differentiate Testing in the Large vs Testing in the Small-

4.5.7 Understand Unit Testing - Driver and Stub Modules-

4.5.8 Understand Black Box Testing and White Box Testing.

4.6 Explain the concept of Debugging

4.6.1 Explain the Debugging Approaches.

4.6.2 List Debugging Guidelines.

4.6.3 Program Analysis Tools - Static Analysis Tools - Dynamic Analysis Tools.

4.6.4 List and Explain the four Integration Testings - Phases vs Incremental Integration Testing- System Testing - Performance Testing.

5.0 Reliability, Quality Management & Maintenance

5.1 Understand the concept of Software Reliability

5.1.1 Differentiate Hardware Reliability and Software Reliability

5.1.2 List the different Reliability Metrics

5.1.3 Understand the Reliability Growth Modeling

5.2 Define Statistical Testing

5.3 Define Software Quality

5.4 Software Quality Management System

5.4.1 Understand the Evolution of Quality Systems

5.5 Define SEI Capability Maturity Model

COURSE CONTENTS

1. Introduction to Software Engineering- Life Cycle Models.

2. Software Project Management- Responsibilities of a Software Project
   Manager- Project planning – Metrics - Project Estimation Techniques- Staffing Level
   Estimation   - Scheduling – Risk Management

3. Requirement Analysis and Specification: Requirement Gathering and Analysis - SRS document

4. Software Design , Coding and Testing: Good software design, Cohesion and Coupling, Software Design Approaches, User interface Design, Software Coding and Testing, Debugging

5. Software Reliability, Quality Management and maintenance – software Reliability- Statistical Testing, Software Quality, Software Quality Management System, SEI capability Maturity Model

REFERENCE BOOKS

1. Fundamentals of Software Engineering – Rajib Mall (PHI) Second Edition.

2. Software Engineering   - Jawadekar (TMH)

3. Software Engineering Concepts   -   Fairley (TMH)

4. Pankaj Jalote international approach to software engineering ":2nd edition

 Narosal publishing house 1997

CRYPTOGRAPHY AND NETWORK SECURITY

Subject Title   : **CRYPTOGRAPHY AND NETWORK SECURITY**
Subject Code   :**CM – 506 B**
Periods per Week   :**05**
Periods per Semester   :**75**

TIME SCHEDULE and BLUE PRINT

S.No	Major Topics	Periods		Weightage Of Marks	Short Type	Essay Type
		Theory	Practice			
1.	Introduction to Network security	11	02	21	2	1 ½
2.	Classical Encryption Techniques	13	10	34	3	2 ½
3.	Cryptographic integrity techniques	13	05	26	2	2
4.	System security	09	02	16	2	1
5.	Firewalls and Ethical Issues	08	02	13	1	1
	Total	**64**	**21**	**110**	**10**	**8**

Objectives:

On completion of the study of the subject the student should be able to comprehend the following

1.   **Introduction to Network security**

1.1   Define security and network security.

1.2   Describe OSI security architecture.

1.3   Discuss about different security goals.

1.4   Define cryptography.

1.5   Discuss about crypto system.

1.6   Discuss about authentication, Confidentiality, integrity w.r.t data.

1.7   Differentiate passive and active security threats.

1.8   List and explain categories of passive and active security attacks.

1.9   List and explain categories of security services.

1.10 List and explain categories of security mechanisms.

1.11 Draw the Model for network security and explain.

2. **Classical Encryption Techniques**

2.1 Define encryption and decryption

2.2 List the essential ingredients of a symmetric cipher.

2.3 Describe two basic functions used in encryption algorithms.

2.4 List keys required for two people to communicate via a cipher.

2.5 Describe the general approaches to attacking a cipher.

2.6 Discuss the Caesar cipher.

2.7 Discuss the monoalphabetic cipher.

2.8 Describe Playfair and Hill ciphers.

2.9 Discuss One-Time-Pad.

2.10 Differentiate mono and polyalphabetic ciphers.

2.11 Discuss the problems with the one-time pad.

2.12 Define a transposition cipher.

2.13 Defne steganography.

2.14 Exercise all the ciphers with examples.

3. **Cryptographic integrity techniques**

3.1 List the principal elements of a public-key cryptosystem.

3.2 List the roles of the public and private key.

3.3 Discuss about message authentication.

3.4 List and explain message authentication requirements.

3.5 List the message authentication functions.

3.6 Discuss about the message authentication code.

3.7 Differentiate between hash function and cryptography Hash function.

3.8 List the applications of cryptographic hash functions.

3.9 Define digital signature.

3.10 List the properties of a digital signature should have.

3.11 List the digital signature requirements.

4.   System security

4.1 Discuss about Intruders, intrusion detection, password management

4.2 Discuss about malicious software like Backdoor, Logic Bomb, Trojan Horses, Mobile Code, Multiple-Threat Malware

4.3 Define virus and warm.

4.4 Discuss about Virus, Virus Nature,Virus Classification,Macro Viruses, Virus Kits,E-Mail Viruses

4.5 Discuss about Virus Countermeasures: Antivirus Approaches, Advanced Antivirus Techniques

4.6 Discuss about Morries worm, worm attacks, worm technologies, mobile phone worms,

4.7 Describe how does a worm propagate.

4.8 Discuss about worm Countermeasures

5.   Firewalls and Ethical Issues

5.1   Define Firewall.

5.2   List types of firewalls.

5.3   Discuss about firewall characteristics

5.4   Analyze the importance of firewall

5.5   Discuss about cyber crime and computer crime,

5.6   Discuss the classification of computer crime based on the role that the computer plays in the criminal activity.

5.7   Explain digital rights management

5.8   List the basic conditions that must be fulfilled to claim a copyright.

5.9   Describe the principal categories of users of digital rights management systems.

COURSE CONTENTS

1. **Introduction to Network security: S**ecurity, Need of Network security, security goals, cryptography, Attacks, Mechanisms and Services, The OSI Security Architecture: Security Services, Availability Services, Security Mechanisms and Security Attacks, A model for Network Security.

2. **Classical Encryption Techniques :** Symmetric Cipher Model, Substitution Techniques : Caesar Cipher, Monoalphabetic Cipher, Playfair Cipher, Hill Cipher, Monoalphabetic cipher, One-Time Pad, Transposition Techniques, Steganography.

3. **Cryptographic integrity techniques :** Principles of Public Key Cryptosystems, Authentication Requirements, Authentication Functions, Message Authentication Codes, Discussledge on Hash Functions and Digital Signatures.

4. **System security:** Intruders**,** Intrusion Detection, Password Management, Backdoor, Logic Bomb, Trojan Horses, Mobile Code, and Multiple-Threat Malware. Viruses: The Nature of Viruses, Viruses Classification, Virus Kits, Macro Viruses, E-Mail Viruses. Virus Countermeasures: Antivirus Approaches, Advanced Antivirus Techniques. Worms: Difference between virus and worm. The Morris Worm, Worm Propagation Model, Recent Worm Attacks, State of Worm Technology, Mobile Phone Worms, Worm Countermeasures, back-up and data recovery.

5. **Firewalls and Ethical Issues :** The Need for Firewalls**,** Firewall Characteristics, Types of Firewalls and their advantages. Legal and Ethical issues: Cybercrime and Computer Crime, Ethical Issues Related to Computers and Information Systems

REFERENCE BOOKS:
1. Cryptography and Network Security: Principles and Practices,- William Stallings - Pearson Education.
2. Cryptography and Network Security –Atul Kahate : Mc Graw Hill
3. Network Security Essentials (Applications and Standards)- William Stallings, Pearson Education.
4. Cryptography and Network Security : 2nd Edition - Behrouz a. Forouzan.
5. computer networking a top-down approach- James F. kurose & Keith W. Ross, Pearson Education.

CLOUD COMPUTING

Subject : **Cloud Computing**

Subject Code : **CM-506 C**

Periods/Week : **5**

Periods/Semester : **75**

TIME SCHEDULE & BLUE PRINT

S.No	Major topic	No.of Periods		Weightage of marks	Short type	Essay type
		Theory	Practice			
1	**Introduction to Cloud Computing**	11	0	13	1	1
2	**Parallel and Distributed Computing**	16	0	26	2	2
3	**Virtualization**	17	**0**	26	2	2
4	**Cloud Computing Architecture**	16	0	24	3	1 ½
5	**Cloud Security and Applications**	15	0	21	2	1 ½
	Total	**75**	**0**	**110**	**10**	**8**

OBJECTIVES:

On completion of the study of the subject, the student should be able to

1.0 **Understand the basics of Cloud Computing:**

1.1 Define the following terms related to recent trends in Computing

1.1.1 Cluster Computing

1.1.2 Grid Computing

1.1.3 Distributed Computing

1.1.4 Utility Computing

1.2 Define Cloud Computing

1.3 State the history of Cloud Computing

1.4 List the features of Cloud Computing

1.5 State the basic principles of Cloud Computing

1.6 List the challenges of Cloud Computing

1.7 List the Cloud Service Providers

        5.4.2.1 Social Networking

        5.4.2.2 Media Applications

        5.4.2.3 Multiplayer Online Gaming

        5.4.2.4 CRM and ERP

COURSE CONTENTS

1. **Introduction to Cloud Computing**

   Recent Trends in Computing, History of Cloud Computing,

   Features, Principles and Challenges of Cloud Computing, Cloud Service Providers

   Advantages and Disadvantages of Cloud Computing, Compare Cluster Computing, Grid

   Computing, Distributed Computing, Utility Computing and Cloud Computing

2. **Parallel and Distributed Computing**

   Eras of Computing, Concepts of Parallel Computing, Concepts of Distributed Computing,

   Parallel Vs Distributed Computing

3. **Virtualization**

   Introduction, Characteristics of Virtualized environments, Classification of Virtualization

   Techniques, Role of Virtualization in Cloud Computing, Pros and Cons of Virtualization

   Virtualization Technologies – Examples (Xen, VM ware, Microsoft Hyper-V)

4. **Cloud Computing Architecture**

   Cloud Reference Model – Architecture, Infrastructure as a Service (IaaS), Platform as a

   Service (PaaS), Software as a Service (SaaS)

   Types of Clouds(Deployment models)– Public Clouds, Private Clouds, Hybrid Clouds

   and Community Clouds.

   Economics of Cloud

5. **Cloud Security and Applications**

   Security, Privacy and Trust

   Infrastructure Security, Data Security, Cloud applications.

REFERENCES

1. Cloud Computing : Principles and Paradigms – Rajkumar Buyya, James Broberg and Andrzej Goscinski
2. Mastering Cloud Computing – Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi
3. Cloud Security and Privacy – Tim Mather, Subra Kumaraswamy, Shahed Latif
4. First Steps in Cloud Computing – Navin Sabharwal, Ravi Shankar

JAVA PROGRAMMING &MOBILE APPLICATION DEVELOPMENT LAB

Subject Title	:	**Java Programming & Mobile Application Development lab**
Subject Code	:	**CM – 507**
Periods per Week	:	**06**
Periods per Semester	:	**90**

JAVA PROGRAMMING LAB

List of Exercises

1. Write programs using Java built-in functions using all data types.
2. Write programs using conditional statements and loop statements.
3. Write a program to read data from keyboard.
4. Write a program to create class and objects.
5. Write programs using constructors.
6. Write a program to illustrate usage of command line arguments.
7. Write programs using concept of overloading methods.
8. Exercise on inheritance.
9. Write a program using the concept of method overriding.
10. Exercise on importing packages.
11. Exercise on interfaces.
12. Exercise on exception handling.
13. Exercise on multithreading and thread priorities.
14. Exercise on database connectivity using JDBC.

MOBILE APPLICATION DEVELOPMENT

List of Exercises

1. Exercise on Android Environment Setup using Android Studio IDE
2. Exercise on Android Environment Setup using Eclipse IDE
3. Create a new Android project to display 'Hello Wolrd'
4. Create a Android app to show a Toast message
5. Create an Android app to illustrate the use of Button control
6. Create an Android app to accept two numbers in two EditText(textfields) and display the sum of them in a Toast message on clicking a button

7. Create an Android app to accept a number in EditText and display the factorial of it in a Toast message on clicking a button

8. Create an Android app to illustrate the use of CheckBox widget.

9. Create an Android app to illustrate the use of Spinner(ComboBox) widget.

10. Create an Android app to illustrate the use of Datepicker widget.

11. Create an Android app to illustrate the use of Timepicker widget.

12. Create an Android app that uses multiple UI controls like EditText, CheckBox, Spinner and Buttons

13. Create an Android app to shift from one activity to another activity using a button.

Objectives and key competencies.

Exp No.	Name of the experiment	Objectives	Key Competencies
1	Write programs using Java built-in functions using all data types.	(a) Write programs using the primitive data types. (b) Display the data.	(a) Identify the data types. (b) Use println() method. (c) Compile the program. (d) Rectify the errors. (e) Observe the output.
2	Write programs using conditional statements and loop statements.	(a) Write program using if statement. (b) Write program using while, do and for constructs.	(a) Identify the differences between C, C++ and Java. (b) Compile the program and rectify the errors. (c) Observe the output.
3	Write a program to read data from keyboard.	(a) Write a program to give values to variables interactively through the keyboard. (b) Write program using different data types.	(a) Use different data types. (b) Use readLine() method. (c) Use println() method. (d) Observe the output.
4	Write a program to create class and objects.	(a) Write a program to create a class and create objects. (b) Write a program to create class and access class members.	(a) Create class. (b) Declare methods. (c) Create objects. (d) Write main method. (e) Access class members.
5	Write programs using constructors.	(a) Write a program using default constructor. (b) Write a program using parameterized constructor.	(a) Declare and define constructor. (b) Call default constructor. (c) Call parameterized constructor.
6	Write a program to illustrate usage of command line arguments.	Write a program to illustrate usage of command line arguments.	(a) Use command line arguments. (b) Run the program. (c) Observe the output.

7	Write programs using concept of overloading methods.	(a) Write a program to illustrate method overloading. (b) Write a program to illustrate method overloading using constructors.	(a) Observe method overloading. (b) Overload constructor methods.
8	Exercise on inheritance.	Write a program to illustrate single inheritance.	(a) Create base class. (b) Write base class constructor. (c) Create derived class. (d) Use *extends* keyword. (e) Use *super* keyword. (f) Write derived class constructor.
9	Write a program using the concept of method overriding.	Write a program using the concept of method overriding.	(a) Use method overriding. (b) Use *this* keyword.
10	Exercise on importing packages.	Write a program to create and use a package.	(a) Create package. (b) Use of access specifiers. (b) Use package. (c) Use *import* keyword.
11	Exercise on interfaces.	Write a program to illustrate multiple inheritance using interfaces.	(a) Define interface. (b) Use *extends* keyword. (c) Use *implements* keyword. (d) Access interface variables.
12	Exercise on exception handling	(a) Write a program to illustrate exception handling. (b) Write a program to illustrate exception handling using multiple catch statements.	(a) Use try – catch. (b) Use multiple catch blocks. (c) Use finally statement.
13	Exercise on multithreading and thread priorities.	(a) Write a program to create a thread by extending the thread class. (b) Write a program to create a thread by implementing the runnable interface.	(a) Use *extends, new*. (b) Use run() and start() methods. (c) Observe thread execution. (d) Use *implements runnable* interface. (e) Use setPriority() and getPriority() methods.

		(c) Write a program to illustrate thread priorities.	
14	Exercise on database connectivity using JDBC.	Write a program to connect to MS-Access Database using JDBC.	(a) Connect to the DB (b) Apply the query (c) Get the Resultset (d) Show the results

	Mobile Application Development Lab Objectives and Key Competencies		
Sl.No	**Name of the Experiment**	**Objectives**	**Key Competencies**
1	Exercise on Android Environment Setup using Android Studio IDE	Install the Android SDK and Android Studio IDE	❖ Confirm whether Android SDK is installed with the required versions ❖ Confirm whether Android Studio is installed with the required components and Emulator
2	Exercise on Android Environment Setup using Eclipse IDE	Install the Android SDK and Eclipse IDE	❖ Confirm whether Android SDK is installed with the required versions ❖ Confirm whether Eclipse IDE is installed with the required components and Emulator
3	Exercise to create a new Android project to display 'Hello World'	Create a new project in Android Studio/Eclipse IDE with	❖ Create a new project in Android IDE
4	Exercise to show a Toast message	Create a Android app to show a Toast message	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Toast class and its required methods

5	Exercise to illustrate the use of button control	Create an Android app to illustrate the use of button control	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Button classes and the required methods ❖ Confirm whether the result shown in the Toast
6	Exercise to create an Android app to accept two numbers in textfields and display the sum of them in a Toast message on clicking a button	Create an Android app to accept two numbers in textfields and display the sum of them in a Toast message on clicking a button	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the EditText and Button classes and the required methods ❖ Confirm whether the addition is performed and shown in the Toast
7	Exercise to create an Android app to accept a number in textfield and display the factorial of it in a Toast message on clicking a button	Create an Android app to accept a number in textfield and display the factorial of it in a Toast message on clicking a button	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the EditText and Button classes and the required methods ❖ Confirm whether the factorial is computed and shown in the Toast
8	Exercise on Checkbox control	Create an Android app to illustrate the use of checkbox control	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Checkbox class and its required methods ❖ Confirm whether the selected checkbox value is shown on a Toast
9	Exercise on Spinner (ComboBox)	Create an Android app to illustrate the use of Spinner(ComboBox) control	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Spinner class and its required methods

	Control		❖ Confirm whether the selected Spinner value is shown on a Toast
10	Exercise on Datepicker	Create an Android app to illustrate the use of Datepicker widget.	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Datepicker class and its required methods ❖ Confirm whether the selected date value is shown on a Toast
11	Exercise on Timepicker	Create an Android app to illustrate the use of Timepicker widget.	❖ Correct syntactical errors ❖ Debug logical errors ❖ Study the Timepicker class and its required methods ❖ Confirm whether the selected time value is shown on a Toast
12	Exercise on multiple UI controls	Create an Android app that uses multiple UI controls like textfield, Checkbox, Spinner and Buttons	❖ Correct syntactical errors ❖ Debug logical errors ❖ Confirm whether the required operations are done properly
13	Exercise on Intent	Create an Android app to shift from one activity to another activity using a button.	❖ Correct syntactical errors ❖ Debug logical errors ❖ Know how to apply startActivity() method using intent ❖ Confirm whether the control moves from one activity to another activity.

Hardware & Networking Lab

Subject Title   : Hardware & Networking Lab

Subject Code   : CM – 508

Periods per Week   : 03

Periods per Semester   : 45

LIST OF EXCERCISES:

1. CMOS setup.

2. Practice on formatting a hard disk using FAT/NTFS Format

3. Practice on formatting of Hard disk

4. Installation of operating system software

5. Practice on how to create a DOS boot disk

6. Installation of device driver software

7. Installation of application software

8. How to recover lost data on hard drive.

9. Familiarize with various troubleshooting and measuring equipment such as multimeter, CRO,Logic probe, Logic Analyzer

10. Know the precautions to be taken while troubleshooting the hardware

11. Know the systematic steps in troubleshooting: Visual inspection, Layman checks, measurement of voltage levels, Beep sounds, Error codes and Use of Advanced Diagnostic tools

12. Trouble shooting keyboard, monitor, printer

13. Installation of Network card and its driver software

14. Installation of a modem (internal, external or USB) and connecting to internet.

15. Preparing the UTP cable for cross and straight connections using crimping tool.

16. Installation of a switch and connecting systems to a network Hub / switch.

17. Using FTP for uploading and downloading files.

18. Installation and configuring the proxy server for internet access.

19. Implementation of peer to peer network

20. Implementation of workgroup network

21. Implementation of Wi-Fi Network

OBJECTIVES AND KEY COMPETENCIES			
Exp.No	Name of the Experiment	Objectives	Key Competencies
1.	CMOS setup.	Perform CMOS setup for required changes	Run CMOS setup
2.	Practice on formatting a Hard disk using FAT / NTFS format	Practice on formatting a Hard disk using FAT/ NTFS format	Practice the following a)Formatting a Hard disk using partition FAT b) formatting a Hard disk using NTFS
3.	Practice on Partition Hard disk	Practice partitioning a HDD	Partition a HDD into logical drives
4.	Installation of operating system software	Installation of any operating system	Install Windows XP/7 Operating system
5	Installation of device driver software	Perform installation of required device driver software's	Install a)chipset b)Audio / video and other required
6	Installation of application software	Installation of any application software	Install a)MS-Office 2007 / MS-Office 2010
7	How to recover lost data on hard drive.	List the steps for recovery of lost data from the hard disk	Recover the lost data a) using a working HD b) using third party tools
8	Familiarize with various troubleshooting and measuring equipment such as multimeter, CRO,Logic probe, Logic Analyzer	Know about troubleshooting & measuring equipment	Know about a. Multimeter b. CRO c. Logic Probe d. Logic Analyzer
9	Know the precautions to be taken while troubleshooting the hardware	Know the precautions to be taken while troubleshooting the hardware	Know the precautions to be taken while troubleshooting the hardware
10	Know the systematic steps in troubleshooting:	Know the systematic steps in troubleshooting:	Know troubleshooting in a. Visual Inspection

	Visual inspection, Layman checks, measurement of voltage levels, Beep sounds, Error codes and Use of Advanced Diagnostic tools	Visual inspection, Layman checks, measurement of voltage levels, Beep sounds, Error codes and Use of Advanced Diagnostic tools	b. Layman checks c. Measuring voltage levels d. Beep sounds e. Error codes f. Usage of advanced diagnostic tools
12	Troubleshooting keyboard, monitor, printer	Perform the trouble shooting of keyboard, monitor and printer	Trouble shoot the following a)keyboard b)monitor c)printer
13	Installation of Network card and its driver software	Perform the Installation of network card and its driver software	Install the following a)NIC b)driver software
14	Installation of a modem (internal, external or USB) and connecting to internet.	Perform installation of a modem (internal, external or USB) and connecting to internet.	Install a. Internal Modem b. External Modem c. USB modem
15	Preparing the UTP cable for cross and straight connections using crimping tool.	Perform UTP cable preparation for cross and straight	Prepare the following a)cross cable b)straight cable
16	Installation of a switch and connecting systems to a network Hub / switch	Installation of switch and connecting systems	Install a)switch b)Connecting systems to switch
17	Using FTP for uploading and downloading files.	Perform uploading and downloading of files	Practice the following a)uploading b)downloading of files
18	Installation and configuring the proxy server for internet access.	Perform the configuration of proxy server	Prepare proxy server and connect to internet
19	Implementation of peer to peer network	Perform peer to peer network	Prepare peer to peer network

20	Implementation of workgroup network	Perform workgroup network	Prepare workgroup network
21	Implementation of Wi-Fi Network	Perform Wi-Fi network	Prepare Wi-Fi network

SYSTEM ADMINISTRATION LAB

Subject Title   **: System Administration LAB**

Subject Code   **: CM – 509**

Periods per Week   **: 03**

Periods per Semester **: 45**

WINDOWS 2008 SERVER ADMINISTRATION

1. Installation of Windows 2008 server operating system
2. Installation of device drivers in Windows-2008 server.
3. Creating and managing user & group accounts in Windows-2008 server
4. Implementation of NTFS file , folder & share permissions
5. Installation & Configuration of DHCP in Windows-2008 server.
6. Installation & Configuration of DNS in Windows-2008 server.
7. Installation & Configuration of RAS in Windows-2008 server.
8. Installation & Configuration of WINS in Windows-2008 server.
9. Installation & Configuration of DFS in LINUX/Windows-2008 server.
10. Installation & Configuration of Local and Network Printer in Windows-2008 server.

LINUX ADMINSTRATION

1. Installation of LINUX operating system
2. Practice on Linux commands
3. Installation of device drivers in LINUX server.
4. Creating and managing user & group accounts in LINUX server
5. Installation & Configuration of DHCP in Windows-2008 server.
6. Installation & Configuration of DNS in Windows-2008 server.
7. Installation & Configuration of Local and Network Printer in Windows-2008 server.
8. Configuring firewall
9. Backing up & restoring Data

WINDOWS 2008 SERVER ADMINISTRATION OBJECTIVES AND KEY COMPETENCIES			
1.	Installation of Windows 2008 server	Perform Installation of Windows 2008 server	Study server software installation procedure Validate whether the memory allocation done Study problems of software installation
2.	Installation of device drivers in Windows-2008 server.	Perform installation of various device drivers in Windows 2008 Server	Install various device drives
3.	Creating and managing user & group accounts in Windows-2008 server	Creating & managing user accounts & group accounts	Create user account & set user rights Create group account, add users & set rights for group
4.	Implementation of NTFS file , folder & share permissions	Set NTFS file, folder & share permissions	Set NTFS a. File permissions b. Folder permissions c. Share permissions
5.	Installation & Configuration of DHCP in Windows-2008 server.	Perform installation & Configuration of DHCP in Windows-2008 server.	Install DHCP Configure DHCP
6.	Installation & Configuration of DNS in Windows-2008 server.	Perform installation & Configuration of DNS in Windows-2008 server.	Install DNS Configure DNS
7.	Installation & Configuration of RAS in Windows-2008 server.	Perform installation & Configuration of RAS in Windows-2008 server.	Install RAS Configure RAS
8.	Installation &	Perform installation &	Install WINS

	Configuration of WINS in Windows-2008 server.	Configuration of WINS in Windows-2008 server.	Configure WINS
9.	Installation & Configuration of DFS in LINUX/Windows-2008 server.	Perform installation & Configuration of DFS in Windows-2008 server.	Install DFS Create DFS root Add DFS clients
10.	Installation & Configuration of Local and Network Printer in Windows-2008 server	Perform installation & Configuration of local & network printer in Windows-2008 server.	Install a local printer Install a network printer
LINUX ADMINISTRATION			
11.	Installation of LINUX operating system	Perform installation of LINUX operating system	List the system requirements. Install LINUX operating system
12.	Practice on Linux commands	Practice LINUX basic & filtering commands	Know the syntax & usage of LINUX commands
13.	Installation of device drivers in LINUX server.	Perform installation of various device drivers in LINUX	Install various device drives
14.	Creating and managing user & group accounts in LINUX server	Creating & managing user accounts & group accounts	Create user account & set user rights Create group account, add users & set rights for group
15.	Installation & Configuration of DHCP in Windows-2008 server	Perform installation & Configuration of DHCP in Windows-2008 server.	Install DHCP Configure DHCP

16.	Installation & Configuration of DNS in Windows-2008 server.	Perform installation & Configuration of DNS in Windows-2008 server.	Install DNS Configure DNS
17.	Installation & Configuration of Local and Network Printer in Windows-2008 server	Perform installation & Configuration of local & network printer in Windows-2008 server.	Install a local printer Install a network printer
18.	Configuring firewall	Configure firewall	Know the importance of firewall
19.	Backing up & restoring Data	Back up & restoring data in LINUX	Take backup of data Restore the data

PROJECT WORK

Subject Title   : **PROJECT WORK**

Subject Code   : **CM – 510**

Periods per Week   : **03**

Periods per Semester : **45**

SHOULD BE IN THE FOLLOWING AREAS:

1. **SOFTWARE PROJECTS**
   a. Web site designing
   b. Banking
   c. Income tax calculation package
   d. Examinations cell.
   e. Student database management
   f. Library management
   g. Stores Management
   h. Staff data management
   i. Payrolls
   j. Inventory Control
   k. Hostel management
   l. Tourism package
   m. Institution management softwares
   n. Anti-Virus software development.
   o. Folder-locking.
   p. Terminate stay resident systems.

2. **HARDWARE and NETWORKING PROJECTS**
   a. LAN establishing
   b. Using interfacing devices
   c. Voice synthesizer
   d. Voice recognizer
   e. Printer sharer
   f. ADD ON cards or any relevant

3. SOFTWARE AND HARDWARE PROJECTS

b. Using interfaces, microcontrollers. Microprocessors and PCs
c. Inter-cum
d. Assembling computer along with peripherals.
e. Traffic light controller
f. Stepper motor related
g. Lift controllers
h. Level controllers
i. Temperature controllers

VI SEMESTER

DIPLOMA IN COMPUTER ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2016 (VI Semester)

Sub Code	Name of the Subject	Duration	Max. Marks	Remarks
CM-601	Industrial Training	6 Months	300	