## MICRO LESSON PLAN

## ELECTRICAL AND ELECTRONICS INSTRUMENTATION (III B.Tech. II Sem.)

UNIT — I: Introduction to Measuring Instruments  1 Classification — deflecting, control and damping torques 2 PMMC, moving iron type instruments — expression for the deflecting torque and control torque 3 Errors in PMMC and compensations, extension of range using shunts and series resistance. Numerical Problems 4 Electrostatic Voltmeters-electrometer type and attracted disc type — Extension of range of E.S. Voltmeters. 5 Problems on extension of range using shunts and series resistance. 6 Problems on extension of range using shunts and series resistance 7 Gaps in the syllabus 1 12 Chalk & Talk 6 Problems on extension of range of E.S. Voltmeters 1 13 Chalk & Talk 7 Gaps in the syllabus 1 14 Chalk & Talk 8 Principle and operation of D.C. Crompton's potentiometer—  \$ VINIT—II: Potentiometers& Instrument transformers  8 Principle and operation of D.C. Crompton's potentiometer—  \$ Standardization 9 Measurement of unknown resistance, current, voltage 2 18 Chalk & Talk 10 A.C. Potentiometers: polar and coordinate type's standardization—applications. 11 Current Transformer and Potential Transformer, Ratio and phase angle errors of CT&PT 12 Gaps in the syllabus 1 23 Chalk & Talk 13 Special descriptive test-I 14 Remedial Class 1 25 Chalk & Talk 10 Extension of range of wattmeter, LPF and UPF, Double element and three element dynamometer wattmeter, approach of the deflecting and control torques 15 Chalk & Talk 16 Extension of range of wattmeter using Instrument 17 Measurement of Active and Reactive powers in balanced and unbalanced systems 18 Single phase induction type energy meter — driving and praking torques 19 Errors and compensations 1 35 Chalk & Talk 20 Testing by phantom loading using R.S.S meter 2 37 Chalk & Talk 21 Three phase energy meter — Trivector meter, maximum 3 40 Chalk & Talk 21 Three phase energy meter — Trivector meter, maximum 3 40 Chalk & Talk	Sl. No.	Name of the Topic	No. of Classes required	Cumulative No.of Classe	A 2 J			
PMMC, moving iron type instruments – expression for the deflecting torque and control torque  Errors in PMMC and compensations, extension of range using shunts and series resistance. Numerical Problems  Electrostatic Voltmeters-electrometer type and attracted disc type—Extension of range of E.S. Voltmeters.  Problems on extension of range using shunts and series resistance  Problems on extension of range of E.S. Voltmeters    1	UNIT – I: Introduction to Measuring Instruments							
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shunts and series resistance. Numerical Problems  Electrostatic Voltmeters-electrometer type and attracted disc type – Extension of range of E.S. Voltmeters.  Problems on extension of range using shunts and series resistance  Problems on extension of range of E.S. Voltmeters  Nunt – II : Potentiometers& I	2	deflecting torque and control torque	3	6	Chalk & Talk			
The problems on extension of range using shunts and series resistance   1   12   Chalk & Talk	3	shunts and series resistance. Numerical Problems	3	9	Chalk & Talk			
Problems on Extension of range of E.S. Voltmeters	4	type – Extension of range of E.S. Voltmeters.	2	1	Chalk & Talk			
Chalk & Talk	5		1	12	Chalk & Talk			
Principle and operation of D.C. Crompton's potentiometer -   2   16   Chalk & Talk	6	Problems on Extension of range of E.S. Voltmeters	1	13	Chalk & Talk			
Principle and operation of D.C. Crompton's potentiometer	7	Gaps in the syllabus	1	14	Chalk & Talk			
Standardization   2	UNIT – II : Potentiometers& Instrument transformers							
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10 A.C. Potentiometers: polar and coordinate type's standardization – applications.  11 Current Transformer and Potential Transformer, Ratio and phase angle errors of CT&PT  12 Gaps in the syllabus  1	8		2	16	Chalk & Talk			
tandardization – applications.  Current Transformer and Potential Transformer, Ratio and phase angle errors of CT&PT  Gaps in the syllabus  I 23 Chalk & Talk  Remedial Class  I 25 Chalk & Talk  UNIT – III: Measurement of Power & Energy  UNIT – III: Measurement of Power & Energy  Single phase dynamometer wattmeter, LPF and UPF, Double element and three element dynamometer wattmeter, expression for deflecting and control torques  Extension of range of wattmeter using Instrument Transformers  Measurement of Active and Reactive powers in balanced and unbalanced systems  Single phase induction type energy meter – driving and braking torques  Perrors and compensations  Testing by phantom loading using R.S.S meter  Three phase energy meter – Trivector meter, maximum demand meters.	9	Measurement of unknown resistance, current, voltage	2	18	Chalk & Talk			
phase angle errors of CT&PT    12   Gaps in the syllabus	10		2	20	Chalk & Talk			
Special descriptive test-I   1   24	11	·	2	22	Chalk & Talk			
1	12	Gaps in the syllabus	1	23	Chalk & Talk			
UNIT - III: Measurement of Power & Energy    Single phase dynamometer wattmeter, LPF and UPF, Double element and three element dynamometer wattmeter, expression for deflecting and control torques    Extension of range of wattmeter using Instrument Transformers	13	Special descriptive test-I	1	24				
Single phase dynamometer wattmeter, LPF and UPF, Double element and three element dynamometer wattmeter, expression for deflecting and control torques  16 Extension of range of wattmeter using Instrument Transformers  1 29 Chalk & Talk  17 Measurement of Active and Reactive powers in balanced and unbalanced systems  18 Single phase induction type energy meter – driving and braking torques  19 Errors and compensations  10 Testing by phantom loading using R.S.S meter  20 Testing by phantom loading using R.S.S meter  21 Three phase energy meter – Trivector meter, maximum demand meters.  3 28 Chalk & Talk  29 Chalk & Talk  20 Chalk & Talk  20 Testing by phantom loading using R.S.S meter  20 Chalk & Talk  21 Chalk & Talk	14	Remedial Class	1	25	Chalk & Talk			
Double element and three element dynamometer wattmeter, expression for deflecting and control torques  Extension of range of wattmeter using Instrument Transformers  Measurement of Active and Reactive powers in balanced and unbalanced systems  Single phase induction type energy meter – driving and braking torques  Extension of range of wattmeter using Instrument 1 29 Chalk & Talk  Chalk & Talk  Tohalk & Talk  Three phase energy meter – Trivector meter, maximum demand meters.	UNIT – III: Measurement of Power & Energy							
Extension of range of wattmeter using Instrument Transformers  1 29 Chalk & Talk  17 Measurement of Active and Reactive powers in balanced and unbalanced systems  18 Single phase induction type energy meter – driving and braking torques  19 Errors and compensations  10 29 Chalk & Talk  20 Testing by phantom loading using R.S.S meter  21 Three phase energy meter – Trivector meter, maximum demand meters.  22 37 Chalk & Talk  23 Chalk & Talk  24 Chalk & Talk  25 Chalk & Talk  26 Chalk & Talk  27 Chalk & Talk  28 Chalk & Talk  29 Chalk & Talk	15	Double element and three element dynamometer wattmeter,	3	28	Chalk & Talk			
and unbalanced systems  Single phase induction type energy meter – driving and braking torques  18 Errors and compensations  19 Errors and compensations  1	16	Extension of range of wattmeter using Instrument	1	29	Chalk & Talk			
braking torques  19 Errors and compensations  1 35 Chalk & Talk  20 Testing by phantom loading using R.S.S meter  2 37 Chalk & Talk  21 Three phase energy meter – Trivector meter, maximum demand meters.  3 40 Chalk & Talk	17		3	32	Chalk & Talk			
20 Testing by phantom loading using R.S.S meter 2 37 Chalk & Talk 21 Three phase energy meter – Trivector meter, maximum demand meters. 3 40 Chalk & Talk	18	0 1 01 0	2	34	Chalk & Talk			
21 Three phase energy meter – Trivector meter, maximum demand meters.  3 Chalk & Talk	19	Errors and compensations	1	35	Chalk & Talk			
demand meters.	20	Testing by phantom loading using R.S.S meter	2	37	Chalk & Talk			
UNIT – IV: DC and AC Bridges	21	1	3	40	Chalk & Talk			

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22	Method of measuring low, medium and high resistance	1	41	Chalk & Talk		
23	Sensitivity of wheatstone's bridge	1	42	Chalk & Talk		
24	Carey foster's bridge,kelvin's double bridge method for low resistance	2	44	Chalk & Talk		
25	Measurement of high resistance-Loss of charge method	1	45	Chalk & Talk		
26	Measurement of inductance, Quality Factor	2	47	Chalk & Talk		
27	Maxwell's bridge ,Hay's bridge ,Anderson'sbridge , Owen's bridge	4	51	Chalk & Talk		
28	Measurement of capacitance and loss angle-Desauty bridge, Wien's bridge	2	53	Chalk & Talk		
29	Schering bridge	1	55	Chalk & Talk		
30	Problems on bridges	1	56	Chalk & Talk		
UNIT – V : Transducers & Oscilloscopes						
31	Definition of Transducers, classification of Transducers, advantages of elelctrical Transducers	2	58	Chalk & Talk		
32	Characteristics and choice of Transducers	1	59	Chalk & Talk		
33	Principle and operation of LVDT and Capacitor Transducers,LVDT applications	3	62	Chalk & Talk		
34	Strain gauge and its principle of operation, gauge factor	1	63	Chalk & Talk		
35	Thermistors, Thermocouples, Piezo elelctric transducers	3	66	Chalk & Talk		
36	Photovoltaic,photoconductive cells,photo diodes	2	68	Chalk & Talk		
37	Cathode Ray Oscilloscope-Cathode ray Tube	2	70	LCD Projector		
38	Time base generator	2	72	Chalk & Talk		
39	Horizontal and vertical amplifiers	2	74	Chalk & Talk		
40	CRO probes	1	75	Chalk & Talk		
41	Applications of CRO-Measurement of phase and frequency-lissajous patterns	2	77	Chalk & Talk		
42	Special descriptive test	1	78			
43	Remedial class	1	80	Chalk & Talk		