**Subject Name: Electrical & Electronics Instrumentation (EEI)**

**Prepared by : A.Suresh Kumar**

**Year and Sem, Department: IV-EEE SEM-II**

**Unit – I:**

Distribution systems usually employ such equipment as transformers, circuit breakers, and protective devices. The original electrical distribution system developed by Thomas Edison was an **underground direct current (DC) system**.

[Good voltage regulation](https://electrical-engineering-portal.com/good-voltage-regulation-and-justified-power-factor-correction) of a distribution network is probably the most important factor responsible for delivering good service to the consumers. For this purpose, design of feeders and distributors requires careful consideration.

#### Feeders

A feeder is designed from the point of view of its current carrying capacity while the voltage drop consideration is relatively unimportant. It is because voltage drop in a feeder can be compensated **by means of voltage regulating equipment at the substation**.

#### Distributors

A distributor is designed from the point of view of the **voltage drop in it**. It is because a distributor supplies power to the consumers and there is a statutory limit of voltage variations at the consumer’s terminals (±6% of rated value).

#### Ring main system

In this system, **the primaries of distribution transformers form a loop**. The loop circuit starts from the substation bus-bars, makes a loop through the area to be served, and returns to the substation.

**The ring main system has the following advantages:**

1. There are less voltage fluctuations at consumer’s terminals.
2. The system is very reliable as each distributor is fed via two feeders. In the event of fault on any section of the feeder, the continuity of supply is maintained.

#### Radial System

In this system, separate feeders radiate from a single substation and feed the distributors **at one end only**. A single line diagram of a radial distribution system is shown in Figure 6. The radial system is employed at low voltage and the substation is located at the center of the load.

This is the **simplest distribution circuit** and has the lowest initial cost.

#### Interconnected power systems

When the feeder ring is energized by two or more than two source, it is called **interconnected system**.

A considerable amount of effort is necessary to maintain an electric power supply within the requirements of various types of consumers. Some of the requirements of a good distribution system are:

* Proper voltage,
* Availability of power on demand and
* Reliability.

**UNIT-II:**

**The substation may include the following equipment:**

1. Power transformer or distribution transformer (depending on substation type)
2. Circuit breakers
3. Disconnecting switches
4. Isolators
5. Busbars
6. [Current transformers](https://electrical-engineering-portal.com/current-transformers-power-circuits)
7. Potential transformers
8. Lightening arrestor
9. [Protective relays](https://electrical-engineering-portal.com/category/protection)
10. Station batteries
11. Earthing system

Substations can be generally divided into three major types (according to voltage levels):

Distribution substations typically operate at **11KV/0.4KV voltage levels** and deliver electric energy directly to industrial and residential consumers.

Distribution substations should be located**as close to the load to be served as possible**. In addition, future load requirement should be planned accurate.

The **level of distribution voltage** is also very important consideration. Generally, the higher the distribution voltage, the farther apart substations may be located. However, they become larger in capacity and in number of customers served as distance apart increases.

|  |  |
| --- | --- |
| ELECTRIAL DISTRIBUTION SYSTEMS – Assignments Questions | |
|  | |
| **UNIT – I** | |
|  |  |
|  | **2 Marks** |
| 1 | Explain Maximum demand? |
| 2 | Coincident demand? |
|  | **3 Marks** |
| 1 | Explain Contribution Factor? |
| 2 | Explain Coincident Factor? |
|  | **5 Marks** |
| 1 | List and explain the various functions in distribution automation? |
| 2 | Explain the characteristics of different types of load models? |
|  |  |
|  |  |
|  | **2 Marks** |
| 1 | Non-coincident demand? |
| 2 | Explain Demand Factor? |
|  | **3 Marks** |
| 1 | Explain Contribution Factor? |
| 2 | Explain Loss Factor? |
|  | **5 Marks** |
| 1 | Define demand, load duration curve and annual load duration curve. |
| 2 | What is meant by term load? How loads can be classified? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Industrial load? |
| 2 | Explain load factor? |
|  | **3 Marks** |
| 1 | Explain Domestic load? |
| 2 | Explain Load charecteristics? |
|  | **5 Marks** |
| 1 | Explain Load modeling and charecteristics? |
| 2 | Explain Relation ship between load factor and loss factor? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Residential and Commertial load? |
| 2 | Explain Agricultural load? |
|  | **3 Marks** |
| 1 | Explain load corve? |
| 2 | Explain load duration curve? |
|  | **5 Marks** |
| 1 | Explain Relation ship between load factor and loss factor? |
| 2 | Explain load charecteristics? |
| **UNIT – II** | |
|  |  |
|  | **2 Marks** |
| 1 | Explain Radial Primary feeder? |
| 2 | Explain Loop type Primary feeder? |
|  | **3 Marks** |
| 1 | Explain Voltage levels? |
| 2 | How do you optimally locate the substation and explain the benefits derived from optimal location? |
|  | **5 Marks** |
| 1 | Explain the rectangular type development and radial type development in case of feeders? |
| 2 | Calculate % voltage drop of hexagonally shaped area of distribution substation? |
|  |  |
|  |  |
|  | **2 Marks** |
| 1 | Explain Feeder Loading? |
| 2 | Explain Secondary distribution system? |
|  | **3 Marks** |
| 1 | Explain Rating of the distribution substation? |
| 2 | Explain service area with n primary feeders? |
|  | **5 Marks** |
| 1 | Explain how to decide the rating of a distribution substation? |
| 2 | Compare the radial and loop type primary feeders? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Radial Primary feeder? |
| 2 | Explain Loop type Primary feeder? |
|  | **3 Marks** |
| 1 | Explain service area with n primary feeders? |
| 2 | Explain Voltage levels? |
|  | **5 Marks** |
| 1 | Discuss the benefits, which are derived through optimal location of substation? |
| 2 | What is meant by express feeder and give its importance in operation of radial type primary feeders? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Radial Primary feeder? |
| 2 | Explain Secondary distribution system? |
|  | **3 Marks** |
| 1 | Explain optimal location of the substation |
| 2 | Explain service area with n primary feeders? |
|  | **5 Marks** |
| 1 | Explain the various factors to be considered to decide the ideal location of substation? |
| 2 | Discuss in details the factors which influence the selection of primary feeders? |
| **UNIT – III** | |
|  |  |
|  | **2 Marks** |
| 1 | Explain Voltage drop? |
| 2 | Explain Power factor? |
|  | **3 Marks** |
| 1 | Explain balenced three phase system? |
| 2 | Explain unbalenced three phase system? |
|  | **5 Marks** |
| 1 | Derive an approximation voltage drop and power loss equation of primary feeder and give the condition for load p.f at which voltage drop is maximum? |
| 2 | Write about non-3- phase primary lines? |
|  |  |
|  |  |
|  | **2 Marks** |
| 1 | Explain Radial Network? |
| 2 | Explain ringmain network? |
|  | **3 Marks** |
| 1 | Explain Power loss? |
| 2 | Explain threephase balenced lines? |
|  | **5 Marks** |
| 1 | Prove the power loss due to load currents in the conductors of the single-phase two-wire ungrounded lateral with full capacity neutral is 6 times larger than the one in the equivalent three phase 4-wire lateral. |
| 2 | In terms of resistance in reactance of the circuit derive the equation for the load p.f for which voltage drop is minimum? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Power factor? |
| 2 | Explain Radial Network? |
|  | **3 Marks** |
| 1 | Explain balenced three phase system? |
| 2 | Explain threephase balenced lines? |
|  | **5 Marks** |
| 1 | Write about non-3- phase primary lines? |
| 2 | Derive the expression for voltage for both concentrated and distributed load? |
|  |  |
|  | **2 Marks** |
| 1 | Explain Secondary distribution system? |
| 2 | Explain ringmain network? |
|  | **3 Marks** |
| 1 | Explain unbalenced three phase system? |
| 2 | Explain service area with n primary feeders? |
|  | **5 Marks** |
| 1 | A feeder supplies an industrial consumer with a cumulative load of  (i) . Induction Motors totaling 300HP which runs at an average efficiency of 89%and lagging  average p.f. of 0.85  (ii). Synchronous Motors totaling 100HP with an average efficiency of 86%and  (iii) a heating load of 100KW. The industrial consumer plans to use the synchronous motors to correct its overall p.f. Determine the required p.f. of the synchronous motors to correct the overall p.f. at peak load to unity |
| 2 |  |
| **UNIT – IV** | |
|  |  |
|  | **2 Marks** |
| 1 | Explain Types of faults? |
| 2 | Explain open faults? |
|  | **3 Marks** |
| 1 | Explain objectives of distribution system protection |
| 2 | Explain fuse – circuit breaker coordination? |
|  | **5 Marks** |
| 1 | Explain the overall coordination procedure employed for protection of distribution? |
| 2 | What is the procedure for fault current calculations in 3-phase faults? |
|  |  |
|  |  |
|  | **2 Marks** |
| 1 | Types of common faults? |
| 2 | Types of short circuit faults? |
|  | **3 Marks** |
| 1 | Explain fault calculation? |
| 2 | Explain Fuse? |
|  | **5 Marks** |
| 1 | Explain the principle of operation of a circuit recloser? |
| 2 | Explain briefly secondary system fault currents calculation for 1-phase 120/240V 3-wire secondary service? |
|  |  |
|  | **2 Marks** |
| 1 | Explin circuit recloser? |
| 2 | Explain line sectionlizers? |
|  | **3 Marks** |
| 1 | Explain circuit breakers? |
| 2 | Explain recloser – circuit breaker coordination? |
|  | **5 Marks** |
| 1 | What are the advantages and disadvantages of fuses? |
| 2 | What are the automatic line sectionalizers? Explain the purpose and advantages of using them? |
|  |  |
|  | **2 Marks** |
| 1 | Explain coordination procedure? |
| 2 | Explain fuse to fuse coordination? |
|  | **3 Marks** |
| 1 | Explain fuse to CB |
| 2 |  |
|  | **5 Marks** |
| 1 | Explain in detail how the coordination of various protective devices helps in improving system performance. |
| 2 | Explain the fuse – fuse coordination in a distribution system. |
| **UNIT – V** | |
|  |  |
|  | **2 Marks** |
| 1 | Expalin Effect of series capacitors? |
| 2 | Explain line drop compensatio? |
|  | **3 Marks** |
| 1 | Write notes on power factor correction? |
| 2 | Explain effect of AVB? |
|  | **5 Marks** |
| 1 | Explain the AVR/AVB methods of voltage control |
| 2 | Explain effect of AVR? |
|  |  |
|  |  |
|  | **2 Marks** |
| 1 | Explain power factor control? |
| 2 | Explain Power capacitor? |
|  | **3 Marks** |
| 1 | Explain Effect of series capacitors? |
| 2 | Explain Fixed capacitors? |
|  | **5 Marks** |
| 1 | “Voltage control and p.f. correction why these are necessary in power systems? What are the disadvantages of low voltage and low p.f. of the system? |
| 2 | A 3-phase transformer rated 7000KVA and has a over load capability of 125% of  the rating. If the connected load is 1150KVA with a 0.8 pf (lag), determine the following :  (a) The KVAR rating of shunt capacitor bank required to decrease the KVA load of the  tansformer to its capability level,  (b) the p.f. of the corrected level,  (c) the KVAR rating of the shunt capacitor bank required to correct the load p.f. to unity. |
|  |  |
|  | **2 Marks** |
| 1 | Explain switched capacitors? |
| 2 | Expalin capacitor location? |
|  | **3 Marks** |
| 1 | Explain economic justification? |
| 2 | Explain best capacitor location |
|  | **5 Marks** |
| 1 | How do the shunt capacitor and reactors control the voltage? List the disadvantages of using a shunt capacitor for voltage control. |
| 2 | Explain the computerized method to determine the economic power factor. |
|  |  |
|  | **2 Marks** |
| 1 | Explain line drop compensatio? |
| 2 | Explain line drop compensatio? |
|  | **3 Marks** |
| 1 | Expalin Effect of series capacitors? |
| 2 | Explain Effect of series capacitors? |
|  | **5 Marks** |
| 1 | “Voltage control and p.f. correction why these are necessary in power systems? What are the disadvantages of low voltage and low p.f. of the system? |
| 2 | With the help of a phasor diagram, show how a series capacitor boosts the voltage? What are the drawbacks of this method? |

:::OBJECTIVE BITS:::

**UNIT-I : Introduction & General Concepts**

1. Out of the following which one is not a unconventional source of energy ?

(A) Tidal power

(B) Geothermal energy

(C) Nuclear energy

(D) Wind power.

Get Answer

C

2. Pulverized coal is

(A) coal free from ash

(B) non-smoking coal

(C) coal which bums For long time

(D) coal broken into fine particles.

Get Answer

D

3. Heating value of coal is approximately

(A) 1000-2000 kcal / kg

(B) 2000-4000 kcal / kg

(C) 5000-6500 kcal / kg

(D) 9000-10,500 kcal / kg.

Get Answer

C

4. Water gas is a mixture of

(A) CO2 and O2

(B) O2and H2

(C) H2, N2 and O2

(D) CO, N2 and H2.

Get Answer

D

5. Coal used in power plant is also known as

(A) steam coal

(B) charcoal

(C) coke

(D) soft coal.

Get Answer

A

6. Which of the following is considered as superior quality of coal ?

(A) Bituminous coal

(B) Peat

(C) Lignite

(D) Coke.

Get Answer

A

7. In a power plant, coal is carried from storage place to boilers generally by means of

(A) bucket

(B) V-belts

(C) trolleys

(D) manually.

Get Answer

B

8. Live storage of coal in a power plant means

(A) coal ready for combustion

(B) preheated coal

(C) storage of coal sufficient to meet 24 hour demand of the plant

(D) coal in transit.

Get Answer

C

9. Pressure of steam in condenser is

(A) atmospheric pressure

(B) more than pressure

(C) slightly less than pressure

(D) much less than pressure.

Get Answer

D

10. Equipment used for pulverizing the coal is known as

(A) Ball mill

(B) Hopper

(C) Burner

(D) Stoker.

Get Answer

A

11. Power plants using coal work closely on known which of the following cycle ?

(A) Otto cycle

(B) Binary vapor cycle

(C) Brayton cycle

(D) Rankine cycle.

Get Answer

D

12. Critical pressure of water is

(A) 1 kg / cm2

(B) 100 kg / cm2

(C) 155 kg / cm2

(D) 213.8 kg / cm2.

Get Answer

D

13. The efficiency of a thermal power plant improves with

(A) increased quantity of coal burnt

(B) larger quantity of water used

(C) lower load in the plant

(D) use of high steam pressures.

Get Answer

D

14. Which of the following contributes to the improvement of efficiency of Rankine cycle in a thermal power plant ?

(A) Reheating of steam at intermediate stage

(B) Regeneration use of steam for heating boiler feed water

(C) Use of high pressures

(D) All of the above.

Get Answer

D

15. Steam pressures usually used in thermal power plants are

(A) 5 kg/cm2 to 10 kg / cm2

(B) 50 kg/cm2 to 100 kg / cm2

(C) 110 kg/cm2 to 170 kg / cm2

(D) 200 kg/cm2 to 215 kg / cm2

Get Answer

C

16. When pulverized fuel is not used, the equipment used for supplying coal to the boiler is

(A) Heater

(B) Stoker

(C) Burner

(D) Skip hoist.

Get Answer

B

17. Burning of low grade fuel can be improved by

(A) Blending with better quality

(B) Oil assisted ignition

(C) Pulverizing

(D) Any of the above.

Get Answer

D

18. As steam expands in turbine

(A) its pressure increases

(B) its specific volume increases

(C) its boiling point increases

(D) its temperature increases.

Get Answer

B

19. Water is supplied to a boiler

(A) at atmospheric pressure

(B) at slightly more than atmospheric pressure

(C) at 100 cm/kg2

(D) at more than the steam pressure on the boiler.

Get Answer

D

20. Which of the following enters the super heater of a boiler ?

(A) Cold water

(B) Hot water

(C) Wet steam

(D) Super-heated steam.

Get Answer

C

21. Super heated steam is always

(A) at a temperature higher than the saturation temperature corresponding to a steam pressure

(B) at a pressure more than the boiler steam pressure

(C) separated from water particles before being supplied to turbine

(D) at a pressure less than the maximum cycle pressure.

Get Answer

A

22. The equipment installed in power plants to reduce air pollution due to smoke is

(A) Induced draft fans

(B) De-super heaters

(C) Electrostatic precipitators

(D) Re-heaters.

Get Answer

C

23. Permissible pH value of water for boilers is

(A) 1

(B) 7

(C) slightly more than 7

(D) 10.

Get Answer

C

24. A condenser in a thermal power plant condenses steam combing out of

(A) Boiler

(B) Super-heater

(C) Economizer

(D) Turbine.

Get Answer

D

25. Which of the following, is not a high pressure boiler ?

(A) Loeffler boiler

(B) Lancashire boiler

(C) Velox boiler

(D) Lamont boiler.

Get Answer

B

26. What is the maximum size of steam turbine usually being installed, for thermal power plants ?

(A) 120 MW

(B) 250 MW

(C) 500 MW

(D) 1000 MW.

Get Answer

C

27. Overall thermal efficiency of a steam power station is in the range

(A) 18-24%

(B) 30-40%

(C) 44-62%

(D) 68-79%.

Get Answer

A

28. Which of the following is not the voltage at which power is usually transmitted

(A)132 kV

(B) 66 kV

(C) 33 kV

(D) 20 kV.

Get Answer

D

29. Most of the generators in thermal power plants run at

(A) 3000 rpm

(B)1500 rpm

(C) 1000 rpm

(D) 750 rpm.

Get Answer

A

30. In regenerative cycle, bled steam is

(A) discharged to atmosphere

(B) condensed in steam condenser

(C) used to beat feed water for boiler

(D) is mixed with steam supplied to turbine.

Get Answer

C

31. Standard frequency usually for electric supply is

(A) 50 Hz

(B) 60 Hz

(C) 50 to 60 Hz

(D) 50 to 55 Hz.

Get Answer

A

32. In power station practice "spinning reserve" is

(A) reserve generating capacity that is in operation but not in service

(B) reserve generating capacity that is connected to bus and ready to take the load

(C) reserve generating capacity that is available for service but not in operation

(D) capacity of the part of the plant that remains under maintenance.

Get Answer

B

33. Bagasse is

(A) low quality coal

(B) a fuel consisting of wood

(C) fibrous portion of sugarcane left after extracting the juice

(D) a kind of rice straw.

Get Answer

C

34. Low grade fuels have

(A) low moisture content

(B) low ash content

(C) low calorific value

(D) low carbon content.

Get Answer

C

35. Which variety of coal has lowest calorific value?

(A) Steam-coal

(B) Bituminous coal

(C) Lignite

(D) Anthracite.

Get Answer

C

36. In a steam locomotive the engine is

(A) Single cylinder

(B) Vertical

(C) Condensing

(D) Non-condensing.

Get Answer

D

37. The boilers using lignite as fuel do not use

(A) under feed stoker

(B) traveling grate stoker

(C) spreader stoker

(D) all of the above.

Get Answer

A

38. In a steam turbine cycle, the lowest pressure occurs in

(A) turbine inlet

(B) boiler

(C) condenser

(D) super heater.

Get Answer

C

39. Steam pressure in modem thermal plants of 100 MW and above capacity may be exacted to be

(A) 10 kg/cm2

(B) 50 kg/cm2

(A) up to 100kg/cm2

(D) more than 100 kg/cm2.

Get Answer

D

40. The overall efficiency of a boiler in a thermal power plant is of the order of

(A)10%

(B) 25 to 30%

(C) 40 to 50%

(D) 70 to 80%.

Get Answer

D

41. Chemical composition of coal is given by

(A) Proximate analysis

(B) Ultimate analysis

(C) Orast analysis

(D) All of the above.

Get Answer

B

42. Which coal will have highest ash content ?

(A) Bituminous coal

(B) Grade I steam coal

(C) Coking coal

(D) Lignite.

Get Answer

D

43. Ash content of most of the Indian coals is around

(A) 1%

(B) 5%

(C) 10%

(D) 20%.

Get Answer

D

**UNIT-II :Distribution Feeders & Substations:**

1. Ash content of coal can be reduced by

(A) slow burning

(B) washing

(C) pulverizing

(D) mixing with high grade coal.

Get Answer

B

2. A 100 MW thermal power-plant will consume nearly how many tonnes of coal in one hour ?

(A) 50 tonnes

(B) 150 tonnes

(C) 1500 tonnes

(D) 15,000 tonnes.

Get Answer

A

3. The steam consumption per kWh of electricity generated in a modem power plant is of the order of

(A) 1-2 kgs

(B) 2-4 kgs

(C) 5-7 kgs

(D) 10-12 kgs.

Get Answer

C

4. For low head and high discharge, the hydraulic turbine used is

(A) Kaplan turbine

(B) Francis turbine

(C) Pelton wheel

(D) Jonual turbine.

Get Answer

A

5. Soot is virtually nothing but

(A) ash

(B) cinder

(C) gas

(D) carbon

Get Answer

D

6. In pumped storage

(A) Power is produced by means of pumps

(B) Water is stored by pumping to high pressures

(C) Downstream water is pumped up-stream during off load periods

(D) Water is re circulated through turbine.

Get Answer

C

7. If the air standard efficiency of. a thermodynamic cycle is given as

η= 1 - ( k ( r-1 ) ) / ( rk-1 )

where r = compression ratio, k = Cp/ Cv

the cycle is

(A) Lenoir cycle

(B) Brayton cycle

(C) Atkinson cycle

(D) None of the above.

Get Answer

A

8. A graphical representation between discharge and time is known as

(A) Monograph

(B) Hectograph

(C) Topograph

(D) Hydrograph.

Get Answer

D

9. Cost of operation of which plant is least ?

(A) Gas turbine plant

(B) Thermal power plant

(C) Nuclear power plant

(D) Hydroelectric plant.

Get Answer

D

10. In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as

(A) Dam

(B) Reservoir

(C) Penstock

(D) Surge tank.

Get Answer

C

11. A Pelton wheel is

(A) inward flow impulse turbine

(B) Outward flow impulse turbine

(C) Inward flow reaction turbine

(D) Axial flow impulse turbine.

Get Answer

D

12. Running away speed of a Pelton wheel is

(A) Actual operating speed on no load

(B) Full load speed

(C) No load speed when governor mechanism fails

(D) 90% greater than the normal speed.

Get Answer

C

13. Spouting velocity is

(A) Ideal velocity of jet

(B) 50% of ideal velocity of jet

(C) Actual velocity of jet

(D) Velocity of jet under specified conditions.

Get Answer

A

14. Outward radial flow turbines

(A) are impulses turbines

(B) are reaction turbines

(C) are partly impulse partly reaction turbines

(D) may be impulse or reaction turbines.

Get Answer

D

15. A Francis turbine is

(A) Inward flow reaction turbine

(B) Inward flow impulse turbine

(C) Outward flow reaction turbine

(D) Outward flow impulse turbine.

Get Answer

A

16. A Kaplan turbine is

(A) a high head mixed flow turbine

(B) an impulse turbine, inward flow type

(C) an reaction turbine, outward flow type

(D) low head axial flow turbine.

Get Answer

D

17. In turbulent flow

(A) the fluid particles move in orderly manner

(B) momentum transfer is on molecular scale only

(C) shear stresses are generally larger than in laminar flow

(D) cohesion is more effective than momentum transfer in causing shear stress.

Get Answer

C

18. An impulse turbine

(A) always operates submerged

(B) makes use of a draft tube

(C) is most suited for low head installations

(D) operates by initial complete conversion to kinetic energy.

Get Answer

D

19. In an impulse turbine

(A) water must be admitted over the whole circumference of the wheel

(B) it is net possible to regulate the flow without loss

(C) wheel must run full and be-kept entirely submerged in water below the tail race

(D) the pressure in the driving fluid as it moves over the vane, is atmospheric.

Get Answer

D

20. In binary vapor cycle

(A) steam at 2 different pressures is used

(B) steam is expanded in 2 turbines

(C) two fluids are used

(D) vapor and liquid are used as working substances.

Get Answer

C

21. Steam engine used in locomotive is

(A) single acting, condensing type

(B) single acting, non-condensing type

(C) double acting, non-condensing type

(D) double acting, condensing type.

Get Answer

C

22. In a thermal power plant cooling towers are used to

(A) condense low pressure steam

(B) cool condensed steam

(C) cool water used in condenser for condensing steam

(D) cool feed water of boiler.

Get Answer

C

23. Major constituent of methane gas is

(A) CO

(B) methane

(C) oxygen

(D) hydrogen.

Get Answer

B

24. Caking is

(A) making cakes of coal out of fine powders

(B) a variety of free burning coals

(C) coal produced from burning of wood in inert atmosphere

(D) in boiler furnace some coals become plastic and form lumps or masses of coal.

Get Answer

D

25. 1 atomic mass unit is equal to

(A) 1.66 x 10 -27 kg

(B) 1.66 x 10-25 kg

(C) 1.66 x 10 -17 kg

(D) 1.66 x 10-10 kg.

Get Answer

A

26. Particles having the same atomic number but different mass numbers arc called

(A) Positrons

(B) Beta particles

(C) Isotopes

(D) Decayed panicles.

Get Answer

C

27. Which of the following material can be used as a moderator ?

(A) Graphite

(B) Heavy water

(C) Beryllium

(D) Any of the above.

Get Answer

D

28. In closed cooling system

(A) hot water is re circulated after cooling

(B) water does not flow

(C) air and water cooling is simultaneously used

(D) constant supply of fresh water for cooling is required.

Get Answer

A

29. A gas turbine works on

(A) Carnot cycle

(B) Brayton cycle

(C) Dual cycle

(D) Rankine cycle.

Get Answer

B

30. Maximum efficiency of an open cycle gas turbine is nearly

(A) 30%

(B) 40%

(C) 50%

(D) 60%.

Get Answer

A

31. Compressor used in gas turbines is

(A) reciprocating compressor

(B) plunger type compressor

(C) screw compressor

(D) multistage axial flow compressor.

Get Answer

D

32. Which auxiliary of gas turbine consumes most of the power ?

(A) Burner

(B) Combustion chamber

(C) Compressor

(D) Fuel pump.

Get Answer

C

33. Gas turbine is widely used in

(A) pumping stations

(B) aircraft

(C) locomotives

(D) automobiles.

Get Answer

B

34. In aircraft using gas turbine, the cycle used is

(A) Simple

(B) Regeneration

(C) Reheating

(D) Reheating with regeneration.

Get Answer

A

35. Overall efficiency of gas turbine is

(A) equal to Rankine cycle efficiency

(B) equal to Carnot cycle efficiency

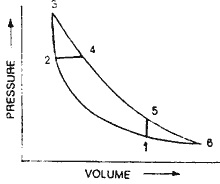
(C) more than Otto or Diesel cycle efficiency

(D) less than Diesel cycle efficiency.

Get Answer

D

36. In the figure, constant volume cycle is represented by



(A) 1245

(B)1235

(C) 12461

(D) 12345.

Get Answer

B

80. The cycle 1236 represents

(A) Otto cycle

(B) Dual cycle

(C) Constant pressure cycle

(D) Atkinson cycle.

Get Answer

D

81. Diesel cycle is represented by

(A) 1236

(B) 1246

(C) 1245

(D) 1285.

Get Answer

C

**Substations:**

1. In a diesel engine fuel is injected at a pressure of

(A) 10 kg/cm2

(B) 20-30 kg/cm2

(C) 60 - 80 kg/cm2

(D) 90 - 130 kgcm2

Get Answer

D

2. Diesel engines.for power plants are usually

(A) horizontal

(B) slow speed

(C) supercharged

(D) air cooled.

Get Answer

C

3. A two stroke engine may be identified by

(A) piston size

(B) absence of valves

(C) cooling system

(D) lubrication system.

Get Answer

B

4. Piston rings for engines are made of

(A) east iron

(B) copper

(C) aluminium

(D) mild steel.

Get Answer

A

5. In a piston the maximum temperature occurs at

(A) ring section

(B) gudgeon pin

(C) top sides

(D) top center.

Get Answer

D

6. The temperature at which a lubricating oil will give off sufficient vapors to form combustible mixture with air, is known as

(A) Flash point

(B) Fire point

(C) Pour point

(D) Combustion point.

Get Answer

A

7. Which temperature for a lubricating oil will be lowest ?

(A) Flash point

(B) Fire point

(C) Pour point

(D) Boiling

Get Answer

C

8. Specific gravity of diesel oil is

(A) 0.84

(B) 1.14

(C) 2.7

(D) 3.8.

Get Answer

A

9. Rank of coal is based oil

(A) fixed carbon and healing value

(B) ash content

(C) size

(D) ash and moisture content.

Get Answer

A

10. The function of piston rings in an internal combustion engine is

(A) to prevent lubrication oil from entering the combustion space

(B) to prevent leakage of combustion chamber products past piston

(C) to transfer heat from piston to cylinder walls

(D) all of the above.

Get Answer

D

11. Which engine has the highest air fuel ratio ?

(A) Petrol engine

(B) Gas engine

(C) Diesel engine

(D) Gas turbine.

Get Answer

D

12. Which of the following will not assist in getting high power output from a compression ignition engine ?

(A) High compression ratio

(B) Fine atomization of fuel

(C) High charge density

(D) Large quantity of excess air.

Get Answer

D

13. The purpose of super-charging an engine is

(A) to increase the power output of the engine

(B) to reduce specific fuel consumption

(C) to reduce the noise of the engine

(D) to improve the cooling of cylinders.

Get Answer

A

14. Most of the heat generated in internal combustion engine is lost in

(A) cooling water

(B) exhaust gases

(C) lubricating oil

(D) radiation.

Get Answer

B

15. In case of diesel engines thermal efficiency is of the order of

(A) 10 to 15 percent

(B) 15 of 25 percent

(C) 25 to 30 percent

(D) 30 to 40 percent.

Get Answer

D

16. A mixture containing 60% cetane and 40% Iso-octane will have

(A) cetane number 60

(B) cetane number 40

(C) octane number 40

(D) none of the above.

Get Answer

D

17. For supercharging of diesel engines, the air is supplied through

(A) reciprocating compressor

(B) centrifugal blower

(C) axial flow compressor

(D) injector.

Get Answer

B

18. The compression ratio in case of gas turbine is of the order of

(A) 5 to 7

(B)10 to 15

(C) 15 to 22

(D) 22 to 30.

Get Answer

A

19. A regenerator in a gas turbine

(A) reduces heat loss in exhaust

(B) permits use of higher compression ratio

(C) improves thermal efficiency

(D) permits use of fuels of inferior quality.

Get Answer

C

20. Out of the following diesel engines, the minimum air consumption per BHP will be in

(A) 4 stroke, mechanical injection

(B) 4 stroke, air injection

(C) 2 stroke, air injection

(D) 2 stroke, mech. injection, pump scavenging.

Get Answer

A

21. For the same maximum pressure and heat input the most efficiency cycle is

(A) Brayton cycle

(B) Otto cycle

(C) Diesel cycle

(D) Dual cycle.

Get Answer

A

22. For the same temperature limits and heat input, the most efficient cycle is

(A) Carnot cycle

(B) Otto cycle

(C) Diesel cycle

(D) Brayton cycle.

Get Answer

A

23. An air filter is used in

(A) nuclear power plants

(B) steam power plants

(C) diesel engine power plants

(D) hydro-power plants.

Get Answer

C

24. Which of the following is not a part of diesel engine power plant ?

(A) Cooling tower

(B) Penstock

(C) Oil pump

(D) Strainer.

Get Answer

B

25. Of the total heat supplied to a diesel engine plant, which one has the highest proportion ?

(A) Useful output

(B) Heat lost to cooling water

(C) Heat lost in exhaust gases

(D) Heat loss in friction radiation, etc.

Get Answer

A

26. Supercharging of a diesel engine means

(A) overloading the engine for peak load

(B) operating the engine with age

(C) operating engine at higher altitudes

(D) supplying pressurized air during suction.

Get Answer

D

27. Which power plant cannot have single units of 100 MW capacity?

(A) Steam power plant

(B) Nuclear power plant

(C) Hydroelectric power plant

(D) Diesel engine power plant.

Get Answer

D

28. In a thermal power plant, heat from the flue gases is recovered in

(A) chimney

(B) de-super heater

(C) economizer

(D) condenser.

Get Answer

C

29. Which of the following is not a fire tube boiler ?

(A) Cochron boiler

(B) Lancashire boiler

(C) Locomotive boiler

(D) Babcock and Wilcox boiler.

Get Answer

D

30. In a super-heater

(A) pressure rises, temperature drops

(B) pressure rises, temperature remains constant

(C) pressure remains constant and temperature rises

(D) both pressure and temperature remains constant.

Get Answer

C

31. Bagasse is

(A) a variety of coal

(B) a fuel consisting of wood etc.

(C) fibrous portion of sugarcane left after extracting the juice

(D) a kind of rice straw.

Get Answer

C

32. Which of the following is not an accessory for a boiler ?

(A) Feed water pump

(B) Condenser

(C) Economizer

(D) Air pre-heater.

Get Answer

B

33. A compound pressure gauge indicates

(A) fluctuating pressures

(B) pressures above atmospheric pressure

(C) pressures below atmospheric pressure

(D) pressures above and below atmospheric pressure.

Get Answer

D

34. For the same cylinder size and rpm which engine will produce more power ?

(A) Gas engine

(B) Petrol engine

(C) Diesel engine

(D) Super-charged engine.

Get Answer

D

35. The internal combustion engines never work on

(A) Diesel cycle

(B) Rankine cycle

(C) Otto cycle

(D) Dual combustion cycle.

Get Answer

B

36. A Joule cycle consists of

(A) two isothermal and two adiabatic processes

(B) two adiabatic and two constant pressure processes

(C) two isothermal and two constant volume processes

(D) two constant volume and two constant pressure processes.

Get Answer

B

37. In ideal diesel cycle the working substance is

(A) air

(B) diesel

(C) mixture of air and diesel

(D) any combustible gas.

Get Answer

A

38. The efficiency of an otto cycle will approach that of Carnot cycle when

(A) engine is operated at high rpm

(B) engine is run at high load

(C) constant volume processes are replaced by isothermal processes

(D) adiabatic processes are replaced by isothermal processes.

Get Answer

C

39. Which power plant normally operates at high speeds ?

(A) Diesel engine plant

(B) Petrol engine plant

(C) Steam turbine plant

(D) Hydro-electric power plant.

Get Answer

C

40. Which instrument can be used to measure the flow of a liquid through a pipe ?

(A) Pitot tube

(B) Venturimeter

(C) Pressure gauge

(D) Orifice.

Get Answer

B

141. A pitot tube is used to measure

(A) energy of liquid

(B) pressure of liquid

(C) energy and pressure of liquid

(D) energy, pressure and discharge of liquid.

Get Answer

B

142. A rotameter is used to measure

(A) velocity of fluids

(B) viscosity of fluids

(C) density of fluids

(D) discharge of fluids.

Get Answer

D

143. Vacuum can be measured by

(A) venturimeter

(B) pitot tube

(C) U tube manometer

(D) rotameter.

Get Answer

C

144. A binary vapor cycle

(A) uses a fluid at two pressures in the cycle

(B) uses fluid in liquid and vapor form

(C) uses two different vapors as working fluid

(D) uses same fluid twice.

Get Answer

C

145. In a steam power plant water is used for cooling purposes in

(A) boiler

(B) economizer

(C) condenser

(D) super-heaters.

Get Answer

C

146. Which steam will have least enthalpy

(A) wet steam at 10 kg/cm2

(B) dry and saturated steam at 10 kg/s cm2

(C) super-heated steam at 10 kg/cm2

Get Answer

A

147. In which part of the steam power plant the pressure of steam is less than the atmospheric pressure ?

(A) Condenser

(B) Boiler

(C) Turbine

(D) Super beater.

Get Answer

A

148. In a thermal power plant a cooling tower cools

(A) steam from boiler

(B) steam from turbine

(C) water from economizer

(D) water from condenser.

Get Answer

D

149. Within the boiler, the temperature of steam is highest in

(A) water drum

(B) water tubes

(C) water walls

(D) super heater.

Get Answer

D

150. In a steam power plant which pipe line section is invariably lagged ?

(A) pipes carrying steam from boiler to turbine

(B) pipes carrying water from condenser

(C) pipes carrying water from water treatment plant

(D) pipes carrying water from boiler feed pump to boiler.

Get Answer

A

151. Which of the following is generally not a constituent of coal ?

(A) Sulphur

(B) Moisture

(C) Chromium

(D) Hydrogen.

Get Answer

C

152. Coil is generally considered to be of

(A) vegetable origin

(B) animal origin

(C) lava origin

(D) none of the above.

Get Answer

A

153. When coal analysis gives fixed carbon, volatile combustible matter, ash and moisture the analysis is termed as

(A) ultimate analysis

(B) proximate analysis

(C) orsat analysis

(D) gross analysis.

Get Answer

B

154. API degree are used to measure

(A) specific gravity of oils

(B) viscosity of oils

(C) flash and fire points of fuels

(D) sulphur content of fuels.

Get Answer

A

155. Sulphur content of liquid fuels assumes importance from the point of view of

(A) efficiency

(B) heating rate

(C) corrosion

(D) firing rate.

Get Answer

C

156. Fire and flash points of oils assume importance from the point of view of

(A) viscosity

(B) tendency to freeze during winter

(C) heating value

(D) ignition and storage hazards.

Get Answer

D

157. Coking is

(A) formation of lumps or masses of coke in boiler furnaces at high temperatures

(B) heating of coal in absence of air, driving out CO2 and leaving behind the residue and carbon

(C) burning of coal in furnace

(D) producing lumps of coal from fine powders with the help of a binder.

Get Answer

B

158. The air standard efficiency of a diesel engine depends on

(A) compression ratio

(B) speed

(C) torque

(D) all of the above.

Get Answer

A

159. The efficiency of steam generators is first a function of design. Beyond that, efficiency depends upon the loading and manner of operation. Good operation consists in

(A) control and limiting of air

(B) minimizing combustibles in refuse and flue gas

(C) maintaining clean heat transfer surfaces

(D) all of the above.

Get Answer

D

160. Generally the major constituent of exhaust gases from a thermal power plant is

(A) oxygen

(B) carbon monoxide

(C) nitrogen

(D) carbon dioxide.

Get Answer

C

161. The compression ratio for diesel engines is generally in the range

(A) 5 to 10

(B) 14 to 22

(C) 10 to 14

(D) 22 to 30.

Get Answer

C

162. Binary vapor cycles are not finding favor with designers because

(A) ideal vapors are not available

(B) initial cost of such plants is high

(C) higher pressures demand thicker sections of piping

(D) such plants are suitable for high load factors only.

Get Answer

B

163. Thermal efficiency of a gas turbine cycle improves as a result of all of the following EXCEPT

(A) heating of air before compression

(B) inter-cooling of air

(C) reheating of gas

(D) multistage expansion.

Get Answer

A

164. Even with best possible arrangements, the thermal efficiency of a gas turbine cycle is always below

(A) 10%

(B) 20%

(C) 25%

(D) 40%.

Get Answer

D

165. The scavenging efficiency of a 4 stroke diesel engine is usually in the range

(A) 50% to 60%

(B) 60% to 75%

(C) 75% to 90%

(D) 95% to 100%.

Get Answer

D

166. Spot the odd one out

(A) Coke-oven as

(B) Water gas

(C) Freon gas

(D) Producer gas.

Get Answer

C

167. The cooking gas used in our homes is a by product of

(A) steel plants

(B) fertilizer plant

(C) petroleum refineries

(D) paper plants.

Get Answer

C

168. In power plants cooling towers are used to

(A) cool exhaust steam

(B) cool repeated steam

(C) cool feed water

(D) cool condenser outlet water.

Get Answer

D

169. Electrostatic precipitator is installed between

(A) coal bunker and boiler

(B) boiler furnace and chimney

(C) economizer and air heater

(D) condenser and economizer.

Get Answer

B

170. Which of the following equipment is installed to minimize pollution of surroundings ?

(A) Water treatment plant

(B) De-super heaters

(C) Cooling towers

(D) Electrostatic precipitators.

Get Answer

D

171. Fly ash : Non-combustible particle : : Cinders:

(A) charred coil

(B) moisture

(C) dust

(D) fog.

Get Answer

A

172. The path followed by the gases discharged from chimney called the 'plume', depends on

(A) thermal properties of gases

(B) dynamic properties of gases

(C) wind direction

(D) all of the above.

Get Answer

D

173. In diesel engines, the injection pressure is of the order of

(A) 2 kg/cm2

(B) 20 kg/cm2

(C) 100 kg/cm2

(D) 400 kg/cm2.

Get Answer

C

174. In a turbine blades acts as

(A) moving blades in impulse turbine stages

(B) moving lades in reaction turbine stages

(C) reversing blades in velocity stages of impulse turbines

(D) any of the above.

Get Answer

D

175. Topping turbines are

(A) high pressure non-condensing units installed in existing plants to exhaust into existing low pressure turbines

(B) those which divert major parts of the throttle steam at intermediate stages of the turbine of process unit

(C) introduce and remove steam into the turbine after the throttle

(D) none of the above.

Get Answer

A

**UNIT-III: Distribution System Analysis :**

1. The total power of a wind stream is proportional to

(A) velocity of stream

(B) ( velocity of stream )2

(C) (velocity of stream )3

(D) 1/ (velocity of stream)

Get Answer

C

21. Tidal energy mainly makes use of

(A) kinetic energy of water

(B) potential energy of water

(C) both kinetic as well as potential energy of water

(D) none of the above.

Get Answer

B

3. Which of the following is a reaction turbine

(A) Banki turbine

(B) Jonval turbine

(C) Girard turbine

(D) None of the above.

Get Answer

D

4. All of the following are electrical mechanical storage systems EXCEPT

(A) Pumped hydro-system

(B) Torsion bar system

(C) Super-conducting coils

(D) Kinetic flywheels.

Get Answer

C

5. Thermal storage of energy is possible in the form of

(A) sensible heat

(B) latent heat

(C) chemical reaction

(D) any of the above.

Get Answer

D

6. Turn around efficiency of pump hydro-schemes seldom exceeds

(A) 10%

(B) 15%

(C) 25%

(D) 65%.

Get Answer

D

7. Batteries used for electrical energy storage are

(A) Laclanche cells

(B) Edison cells

(C) Lead acid cells

(D) Any of the above.

Get Answer

C

8. Turn around efficiency of battery energy storage system is around

(A) 75 percent

(B) 50 percent

(C) 25 percent

(D) 10 percent.

Get Answer

A

9. Sodium sulphur batteries use electrolyte consisting of

(A) solid aluminium oxide

(B) dilute sulphuric acid

(C) brine

(D) KOH.

Get Answer

A

225. Certain metals become super-conducting when cooled below

(A) melting point

(B) transition temperature

(C) 00 K

(D) 00 C.

Get Answer

B

226. Which power plant is free from environmental pollution problems ?

(A) Thermal power plant

(B) Nuclear power plant

(C) Hydro-power plant

(D) Geothermal energy power plant

Get Answer

C

227. Chemical representation for heavy water is

(A) H20

(B) H2O2

(C) H30

(D) D3O.

Get Answer

D

228. The presence of CO2 and H2O in the atmosphere results in absorption of

(A) short wave ultra-violet radiations

(B) visible wavelengths of spectrum

(C) long wave infrared radiations

(D) all of the above.

Get Answer

C

229. Return to earth of the oxides of sulphur and nitrogen occurs in the form of

(A) acid rain

(B) acid snow

(C) acid fog

(D) any of the above.

Get Answer

D

230. The average pH of normal rainfall is usually

(A) neutral

(B) slightly acidic

(C) slightly alkaline.

Get Answer

B

231. Earth coal

(A) lignite

(B) coal dust

(C) black earth

(D) wet coal.

Get Answer

A

232. Ebb current is

(A) the same as eddy current

(B) the movement of the tidal current away from shore or down a tidal stream

(C) the removal by screen of undesirable fine materials from broken are

(D) none of the above.

Get Answer

B

233. Ekman spiral is an idealized mathematical description of

(A) ocean temperature gradient

(B) wind distribution in the planetary boundary layer

(C) carbon dioxide percentage variation with elevation

(D) radioactive decay of materials.

Get Answer

B

234. Which of the following converts electrical energy to radiant heat ?

(A) Solar cell

(B) Storage battery

(C) Wankel engine

(D) Incandescent lamp.

Get Answer

D

235. Which of the following converts thermal energy to kinetic energy ?

(A) Thermocouple

(B) Storage battery

(C) Fuel cell

(D) Rocket.

Get Answer

D

236. Beneficiation process is mainly used for

(A) coals

(B) oils

(C) nuclides

(D) minerals.

Get Answer

A

237. Betz law finds application in

(A) MHD systems

(B) Solar cells

(C) Geothermal power plants

(D) Wind mills.

Get Answer

D

238. Cleat is

(A) main joint in a coal seam along which it breaks most easily

(B) floor of a coal seam

(C) carton and sulphur compound

(D) crude oil containing low percentage of sulphur.

Get Answer

A

239. Coal broken into angular fragments is known as

(A) coal briquettes

(B) coal breccia

(C) coal bank

(D) coal auger.

Get Answer

B

240. Coal rank classifies coal according to its

(A) carbon percentage

(B) ash content

(C) degree of metamorphism

(D) density.

Get Answer

C

241. Baryon is one of the class of heavy elementary particles that includes

(A) hyperons

(B) neutrons

(C) protons

(D) all of the above.

Get Answer

D

**UNIT-IV: Protective Devices & Coordination:**

1. Which of the following is heavy oil ?

(A) Gasoline

(B) Kerosene oil

(C) Diesel oil

(D) Bunker oil.

Get Answer

D

2. Deuterium oxide is used in nuclear reactors as

(A) fuel

(B) moderator

(C) shield

(D) regulator.

Get Answer

B

3. Heliochemical process is the process by which

(A) solar energy is utilized through photosynthesis

(B) neutron energy is converted into thermal energy

(C) geothermal energy is converted Into electrical energy

(D) wind energy is converted into electrical energy.

Get Answer

A

4. Fixed carbon in case of bituminous coals is less than

(A) 70%

(B) 50%

(C) 35%

(D) 15%.

Get Answer

A

5. Humacite is the name associated with

(A) lignites

(B) radioactive minerals

(C) bitumens

(D) refrigerants.

Get Answer

C

6. In case of humic coals, hydrogen percentage varies from

(A) 4 to 6 percent

(B) 10 to 15 percent

(C) 16 to 20 percent

(D) 20 to 30 percent.

Get Answer

A

7. Hyperon has mass

(A) greater than that of a proton and less than that of a deutron

(B) less than that of a proton and more than that of a deutron

(C) more than that of a proton as well as deuteron

(D) less than that of a proton as well as a deuteron.

Get Answer

A

8. The charge of a two stroke diesel engine consists of

(A) air + diesel fuel + lubricating oil

(B) air + diesel fuel

(C) air + lubricating oil

(D) air only.

Get Answer

D

9. Integrated demand is

(A) the demand averaged over a specific period

(B) the joint demand of several consumers

(C) supplementary demand of various consumers

(D) none of the above.

Get Answer

A

10. Which of the following is not needed in magneto hydrodynamic power plants ?

(A) Chimney

(B) Combustor

(C) Steam-turbine

(D) Fuel.

Get Answer

C

278. Marsh gas

(A) a mixture of gaseous hydrocarbons produced from coal or oil

(B) a by product of blast furnace

(C) low calorific value gas containing carbon monoxide and steam

(D) same as methane.

Get Answer

D

279. Nephtha is a volatile colourless product obtained from

(A) methyl alcohol

(B) vinyl acetate

(C) sugarcane

(D) petroleum.

Get Answer

D

280. Natural gas is obtained

(A) as by product from blast furnace

(B) as by product from petroleum refining

(C) from earth's surface usually along with crude

(D) from ammonia.

Get Answer

C

281. Osmotic energy conversion involves energy production from

(A) low boiling point liquids

(B) low vapor pressure liquids

(C) miscible liquids

(D) salt water.

Get Answer

D

282. Parr's-classification of coal is based on

(A) proximate analysis

(B) ultimate analysis

(C) orsat analysis

(D) none of the above.

Get Answer

A

283. Peat coal is

(A) anthracite coal, small in size

(B) same as peat

(C) low ash content lignite

(D) none of the above.

Get Answer

A

284. Perlite is

(A) a low ash containing coal

(B) same as lignite

(C) an insulation material

(D) none of the above.

Get Answer

C

285. PF number refers to

(A) acidic/alkaline water

(B) energy with which water is held in the soil

(C) decomposition of molecules caused by the absorption of light

(D) smog produced by the action of sunlight on the pollutants.

Get Answer

B

286. A photovoltaic cell converts

(A) heat energy into mechanical energy

(B) chemical energy into electrical energy

(C) solar energy into electrical energy

(D) electrical energy into chemical energy.

Get Answer

C

287. Producer gas mainly contains

(A) carbon dioxide and steam

(B) carbon monoxide and nitrogen

(C) methane, ethane and butane

(D) hydrocarbons.

Get Answer

B

288. Pyrheliometer measures

(A) intensity of direct solar radiation

(B) wind speed at an elevation

(C) fission caused by thermal neutrons

(D) total electromagnetic radiation emitted by the sun.

Get Answer

A

289. Quad is a measure of

(A) photosynthesis

(B) wind power

(C) radioactive decay

(D) energy.

Get Answer

D

290. For the same heat input and the same maximum pressure, the most efficient cycle is

(A) Brayton cycle

(B) Otto cycle

(C) Diesel cycle

(D) Dual cycle.

Get Answer

A

291. Sweet gas is free of

(A) carbon dioxide

(B) carbon monoxide

(C) nitrogen

(D) hydrogen sulphide.

Get Answer

D

292. Therm is a unit of

(A) radioactivity

(B) heating value

(C) wind speed

(D) tidal wave.

Get Answer

B

293. Thermal neutrons are

(A) exceptionally fast neutrons

(B) fast neutrons

(C) moderately fast neutrons

(D) slow neutrons.

Get Answer

D

294. No moving parts are required in

(A) MHD generator

(B) Tidal power plant

(C) Thermionic conversion

(D) OTEC power plant.

Get Answer

C

295. TNT stands for

(A) thermonuclear thorium

(B) total neutron transition

(C) thermal neutron treatment

(D) trinitrotoluene.

Get Answer

D

296. A sodium graphite reactor uses

(A) sodium as moderator and graphite as coolant

(B) sodium as coolant and graphite as moderator

(C) a mixture of sodium and graphite as coolant

(D) a mixture of sodium and graphite as moderator.

Get Answer

B

297. Solvent refined coal has low percentage of

(A) ash

(B) sulphur

(C) impurities

(D) all of the above.

Get Answer

D

**Co-ordination:**

1. Which of the following is not the trans­mission voltage in America ?

(A) 66 kV

(B) l32kV

(C) 264 kV

(D) 400 kV

Get Answer

C

2. Which of the following is usually not the generating voltage ?

(A) 6.6 kV

(B) 9.9 kV

(C) 11kV

(D) 13.2 kV.

Get Answer

B

3. Boosters are basically

(A) inductors

(B) capacitors

(C) transformers

(D) synchronous motors.

Get Answer

C

4. Which of the following is not the distribution system normally used

(A) 3 phase-4 wire

(B) 3 phase-3 wire

(C) Single phase - 3 wire

(D) Single phase -4 wire.

Get Answer

D

5. Conductors for high voltage transmission lines are suspended from towers

(A) to reduce clearance from ground

(B) to increase clearance from ground

(C) to reduce wind and snow loads

(D) to take care of extension in length during summer.

Get Answer

B

6. Transmission efficiency increases as

(A) voltage and power factor both increase

(B) voltage and power factor both decrease

(C) voltage increases but power factor decreases

(D) voltage decreases but power factor increases.

Get Answer

A

7. With same maximum voltage to earth, which ac system (with p.f. 0.8) will require more copper as compared to dc 2 wire system

(A) single phase. 2 wire (mid point earthed)

(B) single phase. 3 wire (neutral=1/2 outer)

(C) three phase three wire

(D) three phase-four wire (neutral = outer).

Get Answer

D

8. When alternating current passes through a conductor

(A) it remains uniformly distributed throughout the section of conductor

(B) portion of conductor near the surface carries more current as compared to the core

(C) portion of conductor near the surface carries less current as compared to the core

(D) entire current passes through the core of the conductor.

Get Answer

B

9. The fact that a conductor carries more current on the surface as compared to core, is known as

(A) skin effect

(B) corona

(C) permeability

(D) unsymmetrical fault.

Get Answer

A

10. The effective resistance of a conductor will be the same as ohmic resistance when

(A) current is in true sine wave form

(B) voltage is low

(C) power factor is unity

(D) Current is uniformly distributed in the conductor cross-section.

Get Answer

D

11. Skin effect results in

(A) reduced effective resistance but increased effective internal reactance of the conductor

(B) increased effective resistance but reduced effective internal reactance of. the conductor

(C) reduced effective resistance as well as effective internal reactance

(D) increased effective resistance as well as effective internal reactance.

Get Answer

B

12. Skin effect depends on

(A) size of the conductor

(B) frequency of the current

(C) resistivity of the conductor material

(D) all of the above.

Get Answer

D

13. The skin effect of a conductor will reduce as the

(A) diameter increases

(B) frequency increases

(C) permeability of conductor material increases

(D) resistivity of conductor material increases.

Get Answer

D

14. Skin effect is proportional to

(A) diameter of conductor

(B) (diameter of conductor)1/2

(C) (diameter of conductor )2

(D) (diameter of conductor )2.

Get Answer

C

15. In overhead transmission lines the effect of capacitance can be neglected when the length of line is less than

(A) 200 km

(B) 160 km

(C) 100 km

(D) 80 km.

Get Answer:D

16. For constant voltage transmission the voltage drop is compensated by installing

(A) synchronous motors

(B) capacitors

(C) inductors

(D) all of the above.

Get Answer

A

17. The disadvantage of constant voltage transmission is

(A) short circuit current of the system is increased

(B) load power factor in heavy loads

(C) large conductor area is required for same power transmission

(D) air of the above.

Get Answer

A

18. The surge impedance for over head line is taken as

(A) 10-20 ohms

(B) 50-60 ohms

(C) 100-200 ohms

(D) 1000-2000 ohms.

Get Answer

C

19. Pin insulators are normally used up to voltage of about

(A)100kV

(B) 66 kV

(C) 33 kV

(D) 25 kV.

Get Answer

D

20. Strain type insulator arc used where the conductors arc

(A) dead ended

(B) at intermediate anchor towers

(C) any of the above

(D) none of the above.

Get Answer

C

21. For 66 kV lines the number of insulator discs used are

(A) 3

(B) 5

(C) 8

(D) 12.

Get Answer

B

22. Ten discs usually suggest that the transmission line voltage is

(A) 11 kV

(B) 33 kV

(C) 66 kV

(D) 132 kV.

Get Answer

D

23. The effect of corona is

(A) increased energy loss

(B) increased reactance

(C) increased inductance

(D) all of the above.

Get Answer

A

24. Corona usually occurs when the electrostatic stress in the air around the conductor succeeds

(A) 30 kV (maximum value)/cm

(B) 22 kV (maximum value)/cm

(C) 11 kV (rms value)/cm

(D) 6.6 kv (rms value)/cm.

Get Answer

A

25. Corona effect can be detected by

(A) hissing sound

(B) faint luminous flow of bluish color

(C) presence of ozone detected by odor

(D) all of the above.

Get Answer

D

26. The current drawn by the line due to corona losses is

(A) sinusoidal

(B) square

(C) non-sinusoidal

Get Answer

C

27. Presence of ozone as a result of corona is harmful because

(A) it gives bad odor

(B) it corrodes the material

(C) it transfers energy to the ground

(D) reduces power factor.

Get Answer

B

28. Between two supports, due to sag the conductor takes the form of

(A) catenary

(B) triangle

(C) ellipse

(D) semi-circle.

Get Answer

A

29. The inductance of a single phase two wire line is given by (D is the distance between conductors and 2v is the diameter of conductor)

(A) 0.4 loge (D/r) mH/km

(B) 0.55 loge (D/r) mH/km

(C) 0.4 loge (r/D) mH/km

(D) 0.55 loge (r/D) mH/km.

Get Answer

A

30. The effect of ice deposition on conductor is

(A) increased skin effect

(B) reduced corona losses

(C) increased weight

(D) reduced sag.

Get Answer

C

46. The bundling of conductors is done primarily to

(A) reduce reactance

(B) increase reactance

(C) increase ratio interference

(D) reduce radio interference.

Get Answer

A

47. Which of the following regulation is considered to be the best

(A) 2%

(B) 30%

(C)70%

(D) 98%.

Get Answer

A

48. The characteristic impedance of a transmission line depends upon

(A) shape of the conductor

(B) surface treatment of the conductors

(C) conductivity of the material

(D) geometrical configuration. of the conductors.

Get Answer

D

49. For a distortion-less transmission line (G = shunt conductance between two wires)

(A) R/L = G/C

(B) RL=GC

(C) RG=LC

(D)RLGC=0

Get Answer

A

50. Guard ring transmission line

(A) improves power factor

(B) reduces earth capacitance of the lowest unit

(C) reduces transmission losses

(D) improves regulation.

Get Answer

B

**UNIT V:** **Voltage Control & Power Factor Improvement:**

1. The heat produced at the contact point, due to passage of current, will least depend on

(A) contact resistance

(B) time during which the current flows

(C) current flowing

(D) temperature of the surrounding medium.

Get Answer

D

2. For the contact and their material, which of the following should have low value

(A) Contact resistance

(B) Thermal capacity

(C) Thermal conductivity

(D) All of the above.

Get Answer

A

3. Minimum arcing voltage will be least in case of

(A) carbon

(B) graphite

(C) tungsten

(D) silver.

Get Answer

D

4. Minimum arcing voltage for platinum is 16 V. It can be therefore concluded that when the voltage is below 16 V

(A) it will not be possible to interrupt the circuit

(B) it will not be possible to pass the current

(C) it will be possible to interrupt any value of current without arcing

(D) it will be possible to interrupt any value of current without bringing contact closer to one another.

Get Answer

C

5. Oil immersion of contacts is the method of

(A) arc dispersion

(B) arc prevention

(C) de ionization

(D) none of the above.

Get Answer

A

6. Which of the following is not the method of arc dispersion ?

(A) Oil immersion of contacts

(B) Magnetic blow out of arc

(C) Use of rectifiers

(D) De ionization of arc path.

Get Answer

C

7. Which of the following contact point metals has the highest melting point ?

(A) Silver

(B) Tungsten

(C) Gold

(D) Copper.

Get Answer

B

8. The arc voltage produced in the circuit breaker is always

(A) in phase with arc current

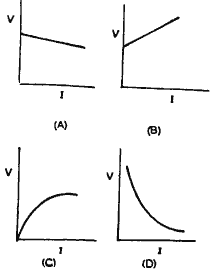
(B) leading the arc current by 90°

(C) lagging the arc current by 90° .

Get Answer

A

9. Which of the following figure represents the voltage-current characteristics of arc in a circuit breaker ?



(A) Figure A

(B) Figure B

(C) Figure C

(D) Figure D.

Get Answer

A

10. Ionization process during arc is generally accompanied by emission of

(A) light

(B) heat

(C) sound

(D) all of the above.

Get Answer

D

71. Sparking between contacts can be reduced by

( A) inserting resistance in the line

(B) inserting a capacitor in series with the contacts

(C) inserting a capacitor in parallel with the contacts.

Get Answer

C

72. For magnetic blow out of arc the magnetic field is produced

(A) in the load circuit

(B) parallel to the axis of the arc

(C) at right angles to the axis of the arc.

Get Answer

C

73. Cool gases are solids brought into the arc stream assist in quenching the arc mainly by

(A) reducing current density

(B) providing arc shield

(C) De ionization

(D) providing parallel paths.

Get Answer

C

74. Sparking occurs when a load is switched off because the circuit has

(A) high inductance

(B) high capacitance

(C) high resistance.

Get Answer

A

75. HRC fuses are

(A) High resistance and Capacitance fuses

(B) Heat reflecting cool fuses

(C) Holding and Resisting current fuses

(D) High rupturing capacity fuses.

Get Answer

D

76. Which of the following metals does not amalgamate with mercury ?

(A) Tungsten

(B) Molybdenum

(C) Nickel alloy

(D) All of the above.

Get Answer

D

77. For the same current, which of the following fuse wires will have the least fusing time ?

(A) 18 SWG TIN - 12.5 A

(B) 20 SWG TIN - 10 A

(C) 22 SWG TIN-7.5 A

(D) 24 SWG TIN-5 A.

Get Answer

D

78. An automatic device that operates at present values is known as

(A) mercury switch

(B) relay

(C) fuse

(D) contactor.

Get Answer

B

79. The basic function of a circuit breaker is to

(A) produce the arc

(B) ionize the surrounding air

(C) transmit voltage by arcing

(D) extinguish the arc.

Get Answer

D

80. In a circuit breaker the arc is indicated by the process of

I. Thermal emission

II. Ionization of oil

III. High temperature of air

IV. Field emission

(A) I and II only

(B) I, II and III only

(C) II, III and IV only

(D) I and IV only.

Get Answer

D

81. The power factor of the arc in circuit breaker is

(A) always zero

(B) always unity

(C) always lagging

(D) always leading.

82. The permissible voltage variation in transmission and distribution system is

(A) ± 0.1%

(B) ± 1%

(C)±10%

(D)± 25%.

Get Answer

C

83. The voltage of transmission can be regulated by

(A) use of tap changing transformers

(B) switching in shunt capacitors at the receiving end during heavy loads

(C) use of series capacitors to neutralize the effect of series reactance

(D) any of the above methods.

Get Answer

D

84. The most economic voltage for transmitting given power over a known distance by overhead transmission line is approximately

(A) 3.6 kV/km

(B) 1.6 kV/km

(C) 2.6 kV/km

(D) 3.6 kVkm.

Get Answer

A

85. String efficiency is given by

(A) (voltage across the string) / ((numbers of discs on the string) x (voltage across disc nearest to the conductor))

(B) ((voltage across the string) x (numbers of discs on the string)) / (voltage across disc nearest to the conductor)

(C) ( (voltage across disc nearest to the conductor) x (numbers of discs on the string)) / (voltage across the string)

(D) (voltage across disc nearest to the conductor))/ ((numbers of discs on the string) x (voltage across the string)

Get Answer

A

86. For a 66 kV line having span of 200 meters between towers the approximate sag will be

(A) 0.02 m

(B) 0.2 m

(C) 2 m

(D) 20 m.

Get Answer

C

87. In the above case if the span is doubled, the sag will be

(A) 2 m

(B) 4m

(C) 8m

(D) 1 m.

Get Answer

C

88. The reflection coefficient for a short circuit line is

(A) 1

(B) Zero

(C) 0.5

(D) - 1.

Get Answer

D

89. In case the height of transmission tower is increased

(A) the line capacitance and inductance will not change

(B) the line capacitance will decrease but line inductance will decrease

(C) the line capacitance will decrease and line inductance will increase

(D) the line capacitance will decrease but line inductance will remain unaltered.

Get Answer

D

90. In a transmission line if booster transformer are to be used, preferred location will be

(A) at the receiving end

(B) at the sending end

(C) at the intermediate point

(D) any where in the line.

Get Answer

C

91. A 70/6 ACSR conduction is an aluminium conductor steel reinforced, having

(A) cross sectional area of aluminium as 70 mm2 and the cross-sectional area of steel as 6 mm2

(B) cross-sectional area of steel as 70 mm2and the cross-sections area of aluminium as 6 mm2

(C) 70 aluminium conductors and 6 steel conductors

(D) 80 steel conductors and 6 aluminium conductors.

Get Answer

C

92. In aluminium conductors steel reinforced, the insulation between aluminium and steel conductors is

(A) any insulator

(B) bitumen

(C) insulin

(D) no insulation is required.

Get Answer

D

93. Under no load conditions the current in a transmission line is due to

(A) corona effects

(B) capacitance of the line

(C) back flow from earth

(D) spinning reserve.

Get Answer

B

94. Which distribution system is more reliable ?

(A) Ring main system

(B) Tree system

(C) Radial system

(D) All are equally reliable.

Get Answer

A

95. Out of the following systems of distribution, which system offers the best economy ?

(A) Direct current system

(B) AC single phase system

(C) AC 3 phase 3 wire system

(D) AC 3 phase 4 wire system.

Get Answer

A

96. What are the advantages of dc transmission system over ac transmission system ?

(A) DC system is economical

(B) There is no skin effect in dc system

(C) Corona limits are highest for dc circuits as compared to ac circuits

(D) All of the above.

Get Answer

D