

1. Low head plants generally use

- a) Pelton turbines
- b) Francis turbines
- c) Kaplan turbines
- d) Both a) and b)

Ans: c

2. The mmf produced by interpole is proportional to

- a) field current
- b) armature current
- c) armature voltage
- d) 1/field current

Ans: b

3. During arcing ground conditions, the phase voltage of the system rises to

- a) 15 times its normal value
- b) 10 times its normal value
- c) 5 to 6 times its normal value
- d)  $\sqrt{3}$  times its normal value

Ans: d

4. Location of lightning arrestor should be near a

- a) generator
- b) transformer
- c) bus-bar
- d) circuit current

Ans: b

5. Isolators are capable of breaking

- a) fault current
- b) no current
- c) load current
- d) charging breaker

Ans: d

6. An equipment has an impedance of 0.9 p.u. to a base of 20 MVA, 22 kV, To the base of 50 MVA, 11 kV, the p.u. impedance will be

- a) 4.7
- b) 20.25
- c) 0.9
- d) 6.75

Ans: b

7. In a system, if the base load is the same as the maximum demand, the load factor will be

- a) 1.0
- b) 0.5
- c) zero
- d) infinity

Ans: a

8. The recovery voltage that appears across the circuit breaker contacts will be maximum for power factor of

- a) zero
- b) 0.5
- c) 0.707
- d) unity

Ans: a

9. The sag of the conductors of a transmission line is 2.5 m when the span is 250m. Now if the height of the supporting towers is increased by 25%, the sag will

- a) reduced by 25%
- b) increase by 25%

c) reduce by 12.5%

d) remain unchanged

Ans: d

10. At times of peak loads, a power system needs

- a) injection of lagging vars
- b) injection of leading vars
- c) none of a) and b)
- d) both of a) and b) alternately

Ans: a

11. Match the items in List-I with those of List-II and select your answers using the codes given in the lists:

<b>List-I</b> (Types of duty)	<b>List-II</b> (Application)
A. Continuous duty	1. Machine tools
B. Short time duty	2. Sirens
C. Continuous duty with intermittent periodic loading	3. Blowers
D. Continuous duty with starting and braking	4. Conveyors

Code:

	A	B	C	D
a.	1	4	3	2
b.	3	2	4	1
c.	4	1	2	3
d.	2	3	1	4

Ans: a

12. If  $t$  is the thickness of the sheet, the tip diameter for spot welding is usually

- a)  $2t$
- b)  $\sqrt{t}$
- c)  $t$
- d)  $\frac{1}{t}$

Ans: a

13. The colour of light emitted by sodium vapour discharge lamp when glowing, steadily, is

- a) pink
- b) yellow
- c) bluish green
- d) blue

Ans: b

14. The inner surface of fluorescent tube is coated with a fluorescent material which

- a) absorbs ultraviolet rays and radiates visible rays
- b) reduces glare
- c) improves life
- d) absorbs infra-red rays and radiates visible

rays

Ans: a

15. A transistor has a current gain of 0.99 in common base mode. Its current gain in common emitter mode is

- a) 0.99
- b) 99
- c) 10.1
- d) 100

Ans: b

16. In arc welding, once the arc is struck, the voltage required to maintain it will be

- a) (20 – 30)V
- b) (100 – 120)V
- c) (200 – 220)V
- d) (500 – 1000)V

Ans: a

17. Which of the following surfaces has the lowest reflection factor for white light?

- a) Aluminium sheets
- b) White plaster work
- c) Blue curtains
- d) White oil paint

Ans: c

18. The burden of current transformers is expressed in

- a) watt
- b) V A
- c) rated secondary current
- d) voltage rating of secondary

Ans: b

19. A wattmeter is being loaded under phantom loading condition. If the wattmeter reading is 60 W, the actual power consumed from the supply, is

- a) much higher than 60 W
- b) 60 W
- c) much less than 60 W
- d) 30 W

Ans: c

20. In an induction type energy meter, everything else remaining same, if the radial distance of the brake magnet poles from the spindle is decreased by 10%, the rotational speed of the disc will approximately

- a) increase by 23.5%
- b) decrease by 10.6%
- c) decrease by 19.4%
- d) increase by 11%

Ans: d

21. Guard electrodes are used in capacitance measurement to minimize

- a) fringing of electric field

- b) thermo emf
- c) dielectric loss
- d) eddy current

Ans: c

22. In Swinburne's method of testing dc machines, the shunt machine is run as a

- a) motor at full load at rated speed and rated voltage
- b) generator at full load at rated speed and rated voltage
- c) generator at no load at rated speed and rated voltage
- d) motor at no load at rated speed and rated voltage

Ans: d

23. A 20 kVA, 2000 V/200 V, 2-winding transformer, with constant voltage source of 2000V, is capable of handling.

- a) 20 kVA
- b) 220 kVA
- c) 320 kVA
- d) None of these

Ans: b

24. The ratio of no load current to full load current of a single phase induction motor is

- a) 0.1
- b) 0.2
- c) 0.4
- d) 0.8

Ans: d

25. Voltage regulation of an alternator may be negative where

- a) the load power factor is lagging
- b) the load power factor is leading
- c) it is load beyond its full load capacity
- d) the machine is run at very low loads

Ans: b

26. A static combination of control coil and compensating coil is used in Megger to minimize the effect of

- a) stray capacitance
- b) surface leakage
- c) stray magnetic field
- d) aging of magnet

Ans: c

27. Megger is an instrument used for measurement of

- a) high resistance
- b) medium resistance
- c) low resistance
- d) leakage current

Ans: a

28. Power transformers are designed such that maximum efficiency occurs at

- a) half of the full load
- b) near full load

- c)  $1/4^{\text{th}}$  of full load  
d)  $3/4^{\text{th}}$  of full load

Ans: d

29. The brushes of a dc machines should be physically placed on the

- a) armature in the polar axis  
b) armature in the interpolar axis  
c) commutation in the polar axis  
d) commutator in the interpolar axis

Ans: c

30. V-curves for isolated, 3-phase synchronous motor show

- a) the variation of mechanical power with field excitation at constant speed  
b) the variation of armature

Ans: d

31. A dc shunt generator is delivering 500 A at 220 V. The shunt field current is 10 A. The armature resistance is  $0.01\Omega$ . The stray power is 5000W. The efficiency of the generator is

- a) 91.09%                      b) 95.82%  
c) 95.64%                      d) 91.82%

Ans: c

32. Which one of the following is correct?

- a) Synchronous motor is supplied with dc voltage in the armature winding  
b) Synchronous motor is supplied with ac voltage in the field winding  
c) Synchronous motor is supplied with rectified voltage in the armature winding  
d) Synchronous motor is supplied with dc voltage in the field winding

Ans: d

33. During starting of a three-phase induction motor, the machine may refuse to start at all. This phenomenon is called

- a) Single phasing              b) Cogging  
c) Stalling                      d) Crawling

Ans: b

34. A fault involving all the three phases of a power system is known as

- a) line to line to ground fault  
b) symmetrical fault  
c) unsymmetrical fault  
d) unbalanced fault

Ans: b

35. A single phase radial distributor is fed at one end at 220 V and is loaded with unity power factor loads as under:

Distance from feeding Load current point in met resin amperes

100	22
220	17
260	20
300	25

If the total resistance for go and return of the distributor is  $0.1\Omega$ , the voltage at the far end is

- a) 213.79 V                      b) 216.89 V  
c) 207.57 V                      d) 215.8 V

Ans: b

36. The capacity factor of a plant is given by

- a) maximum load/average load  
b) average load/maximum load  
c) average load/plant capacity  
d) maximum load/plant capacity

Ans: c

37. In a power supply system, “demand factor” is defined as

- a)  $\frac{\text{Average demand}}{\text{Maximum demand}}$   
b)  $\frac{\text{Maximum demand}}{\text{Installed capacity}}$   
c)  $\frac{\text{Average demand}}{\text{Installed capacity}}$   
d)  $\frac{\text{Maximum demand}}{\text{Connected load}}$

Ans: d

38. In the Merz Price system of protection of alternator, if  $i_1$  and  $i_2$  are the CT secondary currents, and  $n_r$  and  $n_o$  are the number of restraining coils and operating coils respectively. Then the torque-balance equation is

- a)  $\frac{i_1 + i_2}{(i_1 - i_2)/2} = \frac{n_r}{n_o}$       b)  $\frac{i_1 + i_2}{(i_1 - i_2)/2} = \frac{n_o}{n_r}$   
c)  $\frac{i_1 - i_2}{(i_1 + i_2)/2} = \frac{n_r}{n_o}$       d)  $\frac{i_1 - i_2}{(i_1 + i_2)/2} = \frac{n_o}{n_r}$

Ans: c

39. The presence of earth in case of overhead lines

- a) Increases the capacitance of the line  
b) Increases the inductance of the line  
c) Decreases the capacitance of the line  
d) Decreases the inductance of the line

Ans: a

40. In arc welding, the voltage required to maintain the arc is in the range of

- a) 200 – 250 volts              b) 1000 – 1200 volts  
c) 2 – 5 volts                      d) 20 – 30 volts

Ans: d

41. In designing lighting scheme, utilization factor is used. It is defined as

- a) utilization factor =  $\frac{\text{total lumens utilized on working plane}}{\text{total lumens radiated by lamp}}$
- b) utilization factor =  $\frac{\text{total lumens utilized on working plane}}{\text{illumination when everything is clean}}$
- c) utilization factor =  $\frac{\text{illumination under normal working condition}}{\text{illumination when everything is clean}}$
- d) utilization factor =  $\frac{\text{total lumens radiated by lamp}}{\text{total lumens utilized on working plane}}$

Ans: a

42. Which of the following equipments has the lowest power factor?

- a) fully loaded induction motor  
b) immersion heater  
c) incandescent lamp  
d) arc lamp

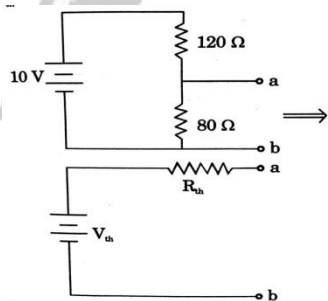
Ans: d

43. Two generators each of capacity 10 MVA and reactance 5% are feeding a common bus bar. A transmission line of reactance 2.5% is connected with the bus bar to transmit power to the consumer end. The contribution of each generator to a three phase fault at the consumer end is

- a) 200 MVA                      b) 80 MVA  
c) 100 MVA                      d) 40 MVA

Ans: b

44. A voltage divider circuit and its Thevenin's equivalent are shown below. The values of  $V_{th}$  the  $R_{th}$  will be



- a) 10 V, 80Ω                      b) 4 V, 80Ω  
c) 4 V, 48Ω                      d) 5 V, 50Ω

Ans: c

45. Two coils with self-inductance 1 H and 2 H having a mutual inductance of 1 H between them carry currents of 2A and  $\sqrt{2}$  A

respectively. The total energy stored in the field, in joules, is

- a)  $2(1 + \sqrt{2})$                       b)  $2(2 + \sqrt{2})$   
c)  $3(1 + \sqrt{2})$                       d)  $3(2 + \sqrt{2})$

Ans: b

46. In dynamometer wattmeter compensating coil

- a) has equal number of turns of voltage coil and is connected in series with current coil  
b) has equal number of turns of current coil and is connected in series with voltage coil  
c) has equal number of turns of current coil and is connected in series with current coil  
d) has equal number of turns of voltage coil and is connected in series with voltage coil

Ans: b

47. Megger is an instrument by which we can measure

- a) high resistance                      b) low resistance  
c) high current                      d) high voltage

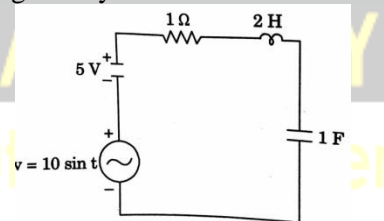
Ans: a

48. With the decrease in the strength of the permanent magnet in an insulation Megger due to ageing, the Megger reading will

- a) be lower than actual  
b) be higher than actual  
c) remain unaffected  
d) fluctuate rapidly

Ans: a

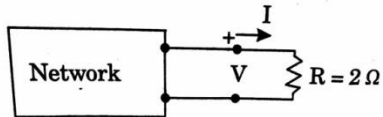
49. In the circuit shown in the figure given below, instantaneous current  $i(t)$  under steady state is given by



- a) zero                      b) 5  
c)  $7.07 \sin t$                       d)  $7.07 \sin(t - 45^\circ)$

Ans: a

50. The  $V - I$  relation for the network shown in the given inbox is  $V = 4I - 9$ . If now a resistor  $R = 2\Omega$  is connected across it, then the value of  $I$  will be.



- a)  $-4.5\text{ A}$                       b)  $-1.5\text{ A}$   
c)  $1.5\text{ A}$                         d)  $4.5\text{ A}$

Ans: c

