ENGINEERING ACADEMY
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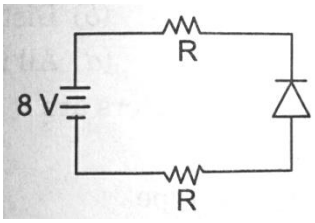
1. The value of voltage across the diode in figure given below is



a) zero volt
b) 4 V
c) 8 V
d) depends upon the value of R

Ans: c

2. The temperature coefficient of an intrinsic semiconductor is
a) zero b) positive
c) negative d) like that of metals

Ans: c

3. A 4-pole, 1200 rpm DC lap wound generator has 1520 conductors. If the flux per pole is 0.01 weber, the emf of generator is
a) 608 volts b) 304 volts
c) 152 volts d) 76 volts

Ans: b

4. In a 3-phase induction motor starting torque will be maximum when

a) $R_2 = \frac{1}{X_2}$ b) $R_2 = X_2$

c) $R_2 = X_2^2$ d) $R_2 = \sqrt{X_2}$

Where R_2 is Rotor resistance and X_2 is rotor reactance

Ans: b

5. The ratio of resistances of a 100W, 220V lamp to that of a 100 W, 110 V lamp will be at respective voltages
a) 4 b) 2 c) 1/2 d) 1/4

Ans: a

6. Two sinusoidal equations are given as

$e_1 = A\sin\left(\omega t + \frac{\pi}{4}\right)$ and $e_2 = B\sin\left(\omega t - \frac{\pi}{6}\right)$

The phase difference between the two quantities is
a) 75° b) 60° c) 105° d) 15°

Ans: a

7. The moderator used in fast breeder reactor is
a) Heavy water b) Graphite
c) Ordinary water d) Any of the above

Ans: _

8. The ratio of the puncture voltage to the flashover voltage of an insulator is
a) equal to one b) lower than one
c) zero d) greater than one

Ans: d

9. Bucholtz relay cannot be used on
a) 500 kV transformer
b) 1000 kV transformer
c) Three phase transformer
d) Air-cooled transformer

Ans: d

10. An ammeter is obtained by shunting a 30Ω Galvanometer with 30Ω resistance. What additional shunt should be connected across it to double the range?
a) 15 Ω b) 10 Ω c) 5 Ω d) 30 Ω

Ans: a

11. Swamping resistance is used to compensate error due to
a) Stray magnetic field
b) Large supply voltage
c) Large supply frequency
d) Temperature variations

Ans: d

12. Which of the following is of high importance in case of induction heating?
a) voltage b) frequency
c) current d) all of the above

Ans: b

13. If four $10\mu F$ capacitor are connected in parallel, the net capacitance is
a) 2.5 μF b) 40 μF
c) 20 μF d) 15 μF

Ans: b

14. Variation in dc excitation of a synchronous motor causes variation in
a) speed of motor
b) power factor
c) armature current
d) both b) and c)

Ans: d

15. The earth's potential is taken as

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a) infinite b) supply voltage
c) 1 volt d) zero
Ans: d

16. The voltage of diversity factor is
a) less than one
b) greater than one
c) equal to one
d) any one of the above
Ans: b

17. The resistance welding process requires is
a) high value of ac current at low voltage
b) low value of ac current at high voltage
c) high value of dc current at low voltage
d) low value of dc current at high voltage
Ans: a

18. The tariff most suitable for large industrial consumers is
a) Flat demand rate
b) Block meter rate
c) Two part tariff
d) All the above
Ans: c

19. Advantage of transmitting power at high voltage is
a) magnitude of current will be small
b) power loss will be less
c) it will reduce the voltage drop in the line impedance
d) all of the above
Ans: d

20. A FET is essentially is
a) Current driven device
b) Voltage driven device
c) Power driven source
d) Solar device
Ans: b

21. Differential relays are used to protect the equipment against
a) internal faults
b) reverse current
c) over-voltage
d) over-current
Ans: d

22. Skin effect exists only in
a) Low voltage dc overhead transmission
b) High voltage dc overhead transmission
c) Cable carrying dc current
d) AC transmission
Ans: d

23. For a 3-phase, 4-pole, 50 Hz synchronous motor the frequency, number of poles, and the load torque are all halved. The motor speed will be
a) 375 rpm b) 75 rpm
c) 1500 rpm d) 3000 rpm
Ans: c

24. The making current of 3-phase breaker with rating 2000 MVA, 33 kV will be
a) 35 kA b) 50 kA
c) 70 kA d) 89 kA
Ans: d

25. A transformer is working at its full load and its efficiency is also maximum. The iron loss is 1000 watts. Then, its copper loss at half of full load will be
a) 250 watt b) 300 watt
c) 400 watt d) 500 watt
Ans: a

26. Dielectric heating is also called
a) volume heating
b) infrared heating
c) surface heating
d) eddy current heating
Ans: a

27. Voltage drop is the main consideration while designing a
a) Feeder b) Distributer
c) Service main d) All of the above
Ans: b

28. Laboratory wattmeters are
a) Induction type
b) Moving iron type
c) Elector-static type
d) Electro-dynamometer type
Ans: d

29.An electric motor may give noise due to
a) magnetic effect
b) defective bearing
c) cooling air
d) all of the above
Ans: d

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30. Which of the following motor is used in household refrigerator?
a) Synchronous motor
b) D.C. shunt motor
c) 3-phase induction motor
d) 1-phase induction motor
Ans: d

31. The lighting arrester is conducted
a) in series with the line
b) between line and earth
c) to a pole near the line
d) to circuit breaker
Ans: b

32. If R_g in the circuit shown in figure 1 is variable between 20Ω and 80 Ω then maximum power transferred to the load R_L will be

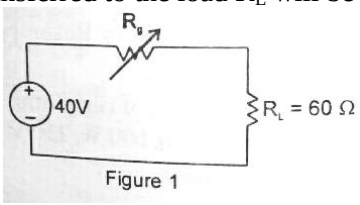


Figure 1

a) 15 W b) 13.33 W
c) 6.67 W d) 2.4 W
Ans: a

33. The knowledge of diversity factor hlepfs in computing
a) plant capacity
b) average load
c) units generated
d) peak demand
Ans: d

34. Distribution transformers are designed to have maximum efficiency nearly at
a) 100% of full load
b) 50% of full load
c) 25% of full load
d) 10% of full load
Ans: b

35. Electronic switching are becoming more and more popular because of
a) noiseless operation
b) long life
c) smaller size and weight
d) all of the above
Ans: d

36. The controlling torque in gravity controlled meter is proportional to
a) $\cos\theta$ b) $\sin\theta$ c) $\tan\theta$ d) θ
Ans: b

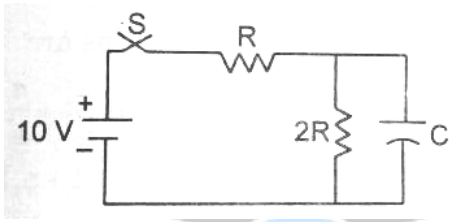
37. The condition for a maximum power output from dc motor is

a) $E_b = V$ b) $E_b = \frac{V}{2}$

c) $E_b = 0$ d) $E_b = \frac{V}{\sqrt{2}}$

Ans: b

38.Time constant of the network shown in figure is



a) $2RC$ b) $3RC$
c) $\frac{RC}{2}$ d) $\frac{2RC}{3}$
Ans: d

39. A 2 kVA transformer has iron loss of 150 W and full load copper loss of 250 W. The maximum efficiency of the transformer will occur when the total loss is
a) 500 W b) 400 W
c) 300 W d) 275 W
Ans: c

40. While starting synchronous motor its field winding should be
a) kept open
b) connected to a dc source
c) connected to ac source
d) kept short-circuited
Ans: d

41. A 4-pole, 3-phase induction motor is running at 4% slip at full load. If the speed of the motor is 750 rpm, the supply frequency is
a) $16\frac{2}{3}$ Hz b) 25 Hz
c) 50 Hz d) 60 Hz
Ans: b

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42. An oscillator uses
a) Positive feedback
b) Negative feedback
c) Both positive and negative feedback
d) No feedback
Ans: a

43. Permeance is analogous to
a) Conductance b) Reluctance
c) Inductance d) Resistance
Ans: a

44. A wire has a resistance 10Ω. It is stretched by one-tenth of its original length. Then its resistance will be
a) 10Ω b) 12.1Ω c) 9Ω d) 11Ω
Ans: b

45. Potential transformers are used
a) to measure high a.c. voltage
b) to measure high d.c. voltage
c) both a) and b)
d) as protective device in high voltage circuits
Ans: a

46.To increase the range of a voltmeter
a) a low resistance is connected in series
b) a low resistance is connected in parallel
c) a high resistance is connected in series
d) a high resistance is connected in parallel
Ans: c

47. A three-phase power transformer is provided with star-delta connections. In order to protect against fault, the connection for current transformer should be in
a) star-star b) delta-star
c) delta-delta d) star-delta
Ans: b

48. For active region operation of NPN transistor
a) Emitter is positive with respect to base
b) Emitter is negative with respect to base
c) Emitter is at same voltage as base
d) Base is at same voltage as collector
Ans: b

49. The advantage of electric breaking is
a) it is instantaneous
b) more heat is generated during breaking
c) it avoids wear of track
d) motor continue to remain loaded during breaking
Ans: d

50. A single phase motor is made self-starting by the addition of a/an
a) Running winding
b) Starting winding
c) Electric starter
d) Auto-transformer
Ans: b