

## MCQ Type for Basic electrical Engg.

Prepared By :- Sushil Swain (Asst. Professor in EE dept.)

1. Electrostatics is a branch of electricity concerned with

- (a) Energy flowing across a gap between conductors
- (b) Charges at rest
- (c) Charges in motion
- (d) Energy in the form of charges

**Ans: B**

2. Four  $2\ \mu\text{F}$  capacitors are connected in series. The equivalent capacitance is

- (a)  $8\ \mu\text{F}$
- (b)  $0.5\ \mu\text{F}$
- (c)  $2\ \mu\text{F}$
- (d)  $6\ \mu\text{F}$

**Ans: B**

3. State which of the following is false.

The capacitance of a capacitor

- (a) Is proportional to the cross-sectional area of the plates
- (b) Is proportional to the distance between the plates
- (c) Depends on the number of plates
- (d) Is proportional to the relative permittivity of the dielectric

**Ans: B**

4. The capacitance of a capacitor is the ratio

- (a) Charge to potential difference between plates
- (b) Potential difference between plates to plate spacing
- (c) Potential difference between plates to thickness of dielectric
- (d) Potential difference between plates to charge

**Ans: A**

5. Which of the following statement is false?

- (a) An air capacitor is normally a variable type
- (b) A paper capacitor generally has a shorter service life than most other types of capacitor
- (c) An electrolytic capacitor must be used only on a.c. supplies
- (d) Plastic capacitors generally operate satisfactorily under conditions of high temperature

**Ans: A**

6. The potential difference across a  $10\ \mu\text{F}$  capacitor to charge it with  $10\text{mC}$  is

- (a) 10V
- (b) 1 kV
- (c) 1V
- (d) 10V

**Ans: B**

7. The energy stored in a  $10\ \mu\text{F}$  capacitor when charged to 500V is

- (a) 1.25 mJ
- (b)  $0.025\ \mu\text{J}$
- (c) 1.25 J
- (d) 1.25 C

**Ans: C**

8. The capacitance of a variable air capacitor is at maximum when

- (a) The movable plates half overlap the fixed plates
- (b) The movable plates are most widely separated from the fixed plates

- (c) Both sets of plates are exactly meshed
- (d) The movable plates are closer to one side of the fixed plate than to the other

**Ans: C**

9. The unit of magnetic flux density is the:

- (a) Weber
- (b) Weber per metre
- (c) Ampere per metre
- (d) Tesla

**Ans: D**

10. The charge on a 10 pF capacitor when the voltage applied to it is 10 kV is

- (a) 100  $\mu\text{C}$
- (b) 0.1 C
- (c) 0.1  $\mu\text{C}$
- (d) 0.01  $\mu\text{C}$

**Ans: C**

11. Four 2  $\mu\text{F}$  capacitors are connected in parallel. The equivalent capacitance is

- (a) 8  $\mu\text{F}$
- (b) 0.5  $\mu\text{F}$
- (c) 2  $\mu\text{F}$
- (d) 6  $\mu\text{F}$

**Ans: A**

12. In a series a.c. circuit the voltage across a pure inductance is 12V and the voltage across a pure resistance is 5V. The supply voltage is

- (a) 13V
- (b) 17V
- (c) 7V
- (d) 2.4V

**Ans: A**

13. Inductive reactance results in a current that

- (a) Leads the voltage by 90deg
- (b) Is in phase with the voltage
- (c) Leads the voltage by  $\pi$  rad
- (d) Lags the voltage by  $\pi/2$  rad

**Ans: D**

14. A 10 $\Omega$  resistor is connected in parallel with a 15  $\Omega$  resistor and the combination in series with a 12  $\Omega$  resistor. The equivalent resistance of the circuit is:

- (a) 37 $\Omega$
- (b) 18  $\Omega$
- (c) 27  $\Omega$
- (d) 4  $\Omega$

**Ans: B**

15. The equivalent resistance when a resistor of  $(1/3)\Omega$  is connected in parallel with a  $(1/4)\Omega$  resistance is:

- (a)  $1/7 \Omega$
- (b) 7 $\Omega$
- (c)  $1/12 \Omega$
- (d)  $3/4 \Omega$

**Ans: A**

16. A 240V, 60W lamp has a working resistance of:

- (a) 1400 $\Omega$
- (b) 60 $\Omega$

(c)  $960\Omega$

(d)  $325\Omega$

**Ans: C**

17. The symbol for the unit of temperature coefficient of resistance is:

(a)  $\Omega / ^\circ\text{C}$

(b)  $\Omega$

(c)  $^\circ\text{C}$

(d)  $\Omega / \Omega^\circ\text{C}$

**Ans: D**

18. The length of a certain conductor of resistance  $100\Omega$  is doubled and its cross-sectional area is halved. Its new resistance is:

(a)  $100\Omega$

(b)  $200\Omega$

(c)  $50\Omega$

(d)  $400\Omega$

**Ans: D**

19. Voltage drop is the:

(a) Maximum potential

(b) Difference in potential between two points

(c) Voltage produced by a source

(d) Voltage at the end of a circuit

**Ans: B**

20. The largest number of  $100\text{W}$  electric light bulbs which can be operated from a  $240\text{V}$  supply fitted with a  $13\text{A}$  fuse is:

(a) 2

(b) 7

(c) 31

(d) 18

**Ans: C**

21. When an atom loses an electron, the atom:

(a) Becomes positively charged

(b) Disintegrates

(c) Experiences no effect at all

(d) Becomes negatively charged

**Ans: A**

22. The energy used by a  $1.5\text{kW}$  heater in 5 minutes is:

(a) 5 J

(b) 450 J

(c) 7500 J

(d) 450 000 J

**Ans: D**

23. The unit of resistivity is:

(a) ohms

(b) ohm millimetre

(c) ohm metre

(d) ohm/metre

**Ans: C**

24. A resistor marked as  $4\text{K}7\text{G}$  indicates a value of:

(a)  $47\Omega \pm 20\%$

- (b)  $4.7\Omega \text{ k} \pm 20\%$
- (c)  $0.47\Omega \pm 10\%$
- (d)  $4.7 \text{ k}\Omega \pm 2$

**Ans: D**

25. The resistance of a 2 km length of cable of cross-sectional area  $2\text{mm}^2$  and resistivity of  $2 \times 10^{-8}\Omega \text{ m}$  is:

- (a)  $0.02\Omega$
- (b)  $20\Omega$
- (c)  $0.02\text{m}\Omega$
- (d)  $200\Omega$

**Ans: B**

26. A piece of graphite has a cross-sectional area of  $10\text{mm}^2$ . If its resistance is  $0.1\Omega$  and its resistivity  $10 \times 10^8 \Omega\text{m}$ , its length is:

- (a) 10 km
- (b) 10 cm
- (c) 10 mm
- (d) 10 m

**Ans: D**

27. A nickel coil has a resistance of  $13\Omega$  at  $50^\circ\text{C}$ . If the temperature coefficient of resistance at  $0^\circ\text{C}$  is  $0.006/^\circ\text{C}$ , the resistance at  $0^\circ\text{C}$  is:

- (a)  $16.9\Omega$
- (b)  $10\Omega$
- (c)  $43.3\Omega$
- (d)  $0.1\Omega$

**Ans: B**

28. A coil of wire has a resistance of 10 at  $0^\circ\text{C}$ . If the temperature coefficient of resistance for the wire is  $0.004/^\circ\text{C}$ , its resistance at  $100^\circ\text{C}$  is:

- (a)  $0.4\Omega$
- (b)  $1.4\Omega$
- (c)  $14\Omega$
- (d)  $10\Omega$

**Ans: C**

29. A colour coding of red-violet-black on a resistor indicates a value of:

- (a)  $27\Omega \pm 20\%$
- (b)  $270\Omega$
- (c)  $270\Omega \pm 20\%$
- (d)  $27\Omega \pm 10\%$

**Ans: C**

30. An inductance of  $10\text{mH}$  connected across a  $100\text{V}$ ,  $50 \text{ Hz}$  supply has an inductive reactance of

- (a)  $10\pi$
- (b)  $1000\pi$
- (c)  $\pi$
- (d)  $\pi \text{ H}$

**Ans: C**

31. The coulomb is a unit of:

- (a) Energy
- (b) Voltage
- (c) Power
- (d) Quantity of electricity

**Ans: D**

32. A charge of 240 C is transferred in 2 minutes. The current flowing is:

- (a) 480A
- (b) 120A
- (c) 2A
- (d) 8A

**Ans: C**

33. A resistance of 50 k $\Omega$  has a conductance of:

- (a) 20S
- (b) 0.02S
- (c) 0.02 mS
- (d) 20 kS

**Ans: C**

34. Which of the following statements is incorrect?

- (a) 1N = 1 kgm/s<sup>2</sup>
- (b) 1V = 1 J/C
- (c) 30mA = 0.03A
- (d) 1 J = 1N/m

**Ans:D**

35. The power dissipated by a resistor of 10 ohm when a current of 2A passes through it is:

- (a) 0.4W
- (b) 20W
- (c) 40W
- (d) 200W

**Ans: C**

36. A mass of 1200g is accelerated at 200 cm/s<sup>2</sup> by a force. The value of the force required is:

- (a) 2.4N
- (b) 2400N
- (c) 240 kN
- (d) 0.24N

**Ans: A**

37. A current of 2A flows for 10 hour through a 100 ohm resistor. The energy consumed by the resistor is:

- (a) 0.5 kWh
- (b) 4 kWh
- (c) 2 kWh
- (d) 0.02 kWh

**Ans:B**

38. The unit of quantity of electricity is the:

- (a) volt
- (b) coulomb
- (c) ohm
- (d) joule

**Ans: B**

39. Electromotive force is provided by:

- (a) Resistance's
- (b) A conducting path
- (c) An electric current
- (d) An electrical supply source

**Ans: C**

40. The unit of current is the:

- (a) Volt
- (b) Coulomb
- (c) Joule
- (d) Ampere

**Ans: D**

41. In order that work may be done:

- (a) Two wires are necessary
- (b) The circuit must have a switch
- (c) Coal must be burnt
- (d) A supply of energy is required

**Ans: D**

42. The ohm is the unit of:

- (a) Charge
- (b) Resistance
- (c) Power
- (d) Current

**Ans: B**

43. The unit of resistivity is:

- (a) ohms
- (b) ohm millimetre
- (c) ohm metre
- (d) ohm/metre

**Ans: C**

44. Voltage drop is the:

- (a) Maximum potential
- (b) Difference in potential between two points
- (c) Voltage at the end of a circuit
- (d) Voltage produced by a source

**Ans: B**

45. A 240V, 60W lamp has a working resistance of:

- (a) 1400 ohm
- (b) 60 ohm
- (c) 960 ohm
- (d) 325 ohm

**Ans: C**

46. The potential difference across a 10  $\mu\text{F}$  capacitor to charge it with 10mC is

- (a) 10V
- (b) 1 kV
- (c) 1V
- (d) 10V

**Ans: B**

47. The energy stored in a 10 $\mu\text{F}$  capacitor when charged to 500V is

- (a) 1.25 mJ
- (b) 0.025  $\mu\text{J}$
- (c) 1.25 J
- (d) 1.25 C

**Ans: C**

48. The capacitance of a variable air capacitor is at maximum when

- (a) The movable plates half overlap the fixed plates
- (b) The movable plates are most widely separated from the fixed plates

- (c) Both sets of plates are exactly meshed
- (d) The movable plates are closer to one side of the fixed plate than to the other

**Ans: C**

49. The unit of magnetic flux density is the:

- (a) Weber
- (b) Weber per metre
- (c) Ampere per metre
- (d) Tesla

**Ans: D**

50. The charge on a 10 pF capacitor when the voltage applied to it is 10 kV is

- (a) 100  $\mu\text{C}$
- (b) 0.1 C
- (c) 0.1  $\mu\text{C}$
- (d) 0.01  $\mu\text{C}$

**Ans: C**

51. Four 2  $\mu\text{F}$  capacitors are connected in parallel. The equivalent capacitance is

- (a) 8  $\mu\text{F}$
- (b) 0.5  $\mu\text{F}$
- (c) 2  $\mu\text{F}$
- (d) 6  $\mu\text{F}$

**Ans: A**

52. In a series a.c. circuit the voltage across a pure inductance is 12V and the voltage across a pure resistance is 5V. The supply voltage is

- (a) 13V
- (b) 17V
- (c) 7V
- (d) 2.4V

**Ans: A**

53. Inductive reactance results in a current that

- (a) Leads the voltage by 90deg
- (b) Is in phase with the voltage
- (c) Leads the voltage by  $\pi$  rad
- (d) Lags the voltage by  $\pi/2$  rad

**Ans: D**

54. A 10  $\Omega$  resistor is connected in parallel with a 15  $\Omega$  resistor and the combination in series with a 12  $\Omega$  resistor. The equivalent resistance of the circuit is:

- (a) 37  $\Omega$
- (b) 18  $\Omega$
- (c) 27  $\Omega$
- (d) 4  $\Omega$

**Ans: B**

55. The equivalent resistance when a resistor of  $(1/3)\Omega$  is connected in parallel with a  $(1/4)\Omega$  resistance is:

- (a)  $1/7 \Omega$
- (b) 7  $\Omega$
- (c)  $1/12 \Omega$
- (d)  $3/4 \Omega$

**Ans: A**

56. A 240V, 60W lamp has a working resistance of:

- (a) 1400  $\Omega$
- (b) 60  $\Omega$

(c)  $960\Omega$

(d)  $325\Omega$

**Ans: C**

57. The symbol for the unit of temperature coefficient of resistance is:

(a)  $\Omega / ^\circ\text{C}$

(b)  $\Omega$

(c)  $^\circ\text{C}$

(d)  $\Omega / \Omega^\circ\text{C}$

**Ans: D**

58. The length of a certain conductor of resistance  $100\Omega$  is doubled and its cross-sectional area is halved. Its new resistance is:

(a)  $100\Omega$

(b)  $200\Omega$

(c)  $50\Omega$

(d)  $400\Omega$

**Ans: D**

59. Voltage drop is the:

(a) Maximum potential

(b) Difference in potential between two points

(c) Voltage produced by a source

(d) Voltage at the end of a circuit

**Ans: B**

60. The largest number of  $100\text{W}$  electric light bulbs which can be operated from a  $240\text{V}$  supply fitted with a  $13\text{A}$  fuse is:

(a) 2

(b) 7

(c) 31

(d) 18

**Ans: C**

61. When an atom loses an electron, the atom:

(a) Becomes positively charged

(b) Disintegrates

(c) Experiences no effect at all

(d) Becomes negatively charged

**Ans: A**

62. The energy used by a  $1.5\text{kW}$  heater in 5 minutes is:

(a) 5 J

(b) 450 J

(c) 7500 J

(d) 450 000 J

**Ans: D**

63. The unit of resistivity is:

(a) ohms

(b) ohm millimetre

(c) ohm metre

(d) ohm/metre

**Ans: C**

64. A resistor marked as  $4\text{K}7\text{G}$  indicates a value of:

(a)  $47\Omega \pm 20\%$



- (b)  $4.7\Omega \text{ k} \pm 20\%$
- (c)  $0.47\Omega \pm 10\%$
- (d)  $4.7 \text{ k}\Omega \pm 2$

**Ans: D**

65. The resistance of a 2 km length of cable of cross-sectional area  $2\text{mm}^2$  and resistivity of  $2 \times 10^{-8}\Omega \text{ m}$  is:

- (a)  $0.02\Omega$
- (b)  $20\Omega$
- (c)  $0.02\text{m}\Omega$
- (d)  $200\Omega$

**Ans: B**

66. A piece of graphite has a cross-sectional area of  $10\text{mm}^2$ . If its resistance is  $0.1\Omega$  and its resistivity  $10 \times 10^8 \Omega\text{m}$ , its length is:

- (a) 10 km
- (b) 10 cm
- (c) 10 mm
- (d) 10 m

**Ans: D**

67. A nickel coil has a resistance of  $13\Omega$  at  $50^\circ\text{C}$ . If the temperature coefficient of resistance at  $0^\circ\text{C}$  is  $0.006/^\circ\text{C}$ , the resistance at  $0^\circ\text{C}$  is:

- (a)  $16.9\Omega$
- (b)  $10\Omega$
- (c)  $43.3\Omega$
- (d)  $0.1\Omega$

**Ans: B**

68. A coil of wire has a resistance of 10 at  $0^\circ\text{C}$ . If the temperature coefficient of resistance for the wire is  $0.004/^\circ\text{C}$ , its resistance at  $100^\circ\text{C}$  is:

- (a)  $0.4\Omega$
- (b)  $1.4\Omega$
- (c)  $14\Omega$
- (d)  $10\Omega$

**Ans: C**

69. A colour coding of red-violet-black on a resistor indicates a value of:

- (a)  $27\Omega \pm 20\%$
- (b)  $270\Omega$
- (c)  $270\Omega \pm 20\%$
- (d)  $27\Omega \pm 10\%$

**Ans: C**

70. An inductance of  $10\text{mH}$  connected across a  $100\text{V}$ ,  $50 \text{ Hz}$  supply has an inductive reactance of

- (a)  $10\pi$
- (b)  $1000\pi$
- (c)  $\pi$
- (d)  $\pi \text{ H}$

**Ans: C**