**ELECTROMAGNETIC FIELDS**

**1. The force between two charges is 120 N. If the distance between the charges is doubled, the force will be**

(a) 60 N (b) 30 N

(c) 40N (d) 15 N

**Ans: b**

**2. The electric field intensity at a point situated 4 meters from a point charge is 200 N/C. If the distance is reduced to 2 meters, the field intensity will be**

(a) 400 N/C (b) 600 N/C

(c) 800 N/C (d) 1200 N/C

**Ans: c**

**3. The lines of force due to charged particles are**

(a) always straight (b) always curved

(c) sometimes curved (d) none of the above

**Ans: b**

**4. The electric field at a point situated at a distance d from straight charged conductor is**

(a) proportional to d (b) inversely proportional to d

(c) inversely proportional to d (d) none of the above

**Ans: b**

**5. The direction of electric field due to positive charges is**

. (a) away from the charge (b) towards the charge

(c) both (a) and (b) (d) none of the above

**Ans: a**

**6. A field line and an equipotential surface are**

(a) always parallel (b) always at 90°

(c) inclined at any angle 0 (d) none of the above

**Ans: b**

**7. The ability of charged bodies to exert force on one another is attributed to the existence of**

(a) electrons (b) protons

(c) neutrons (d) electric field

**Ans: d**

**8. If the sheet of a bakelite is inserted between the plates of an air capacitor, the capacitance will**

(a) decrease (b) increase

(c) remains unchanged (d) become zero

**Ans: b**

**9. A capacitor stores 0.24 coulombs at 10 volts. Its capacitance is**

(a) 0.024 F (b) 0.12 F

(c) 0.6 F (d) 0.8 F

**Ans: a**

**10. For making a capacitor, it is better to select a dielectric havings**

(a) low permittivity (b) high permittivity

(c) permittivity same as that of air (d) permittivity slightly more than that of air

**Ans: b**

**11. The units of capacitance are**

(a) volts/coulomb (b) coulombs/volt

(c) ohms (d) henry/Wb

**Ans: b**

**12. If three 15 uF capacitors are connected in series, the net capacitance is**

(a) 5 uF (b) 30 uF

(c) 45 uF (d) 50 uF

**Ans: a**

**13. If three 10 uF capacitors are connected in parallel, the net capacitance is**

(a) 20 uF (b) 30 uF

(c) 40 uF (d) 50 uF

**Ans: b**

**14. A dielectric material must be**

(a) resistor. (b) insulator

(c) good conductor. (d) semiconductor

**Ans: b**

**15. An electrolytic capacitor can be used for**

(a) D.C. only (b) AC. Only

(c) both D.C. as well as A.C. (d) none

**Ans: b**

**16. The capacitance of a capacitor is not affected by**

(a) distance between plates (b) area of plates

(c) thickness of plates (d) all of the above

**Ans: c**

**17. Which of the following is not a vector?**

(a) Linear momentum (b) Angular momentum

(c) Electric field (d) Electric potential

**Ans: b**

**18. Two plates of a parallel plate capacitor after being charged from a constant voltage source are separated apart by means of insulated handles, then the**

(a) Voltage across the plates increases (b) voltage across the plates decreases

(c) charge on the capacitor decreases (d) charge on the capacitor increases

**Ans: b**

**19. If A.C. voltage is applied to capacitive circuit, the alternating current can flow in the circuit because**

(a) varying voltage produces the charging and discharging currents

(b) of high peak value

(c) charging current can flow

(d)discharge current can flow

**Ans: a**

**20. Voltage applied across a ceramic dielectric produces an electrolytic field 100 times greater than air. What will be the value of dielectric constant ?**

(a) 50 (b) 100

(c) 150 (d) 200 **Ans: b**

**21.Which of the following statements is correct ?**

(a) Air capacitors have a black band to indicate the outside foil

(b) Electrolytic capacitor must be connected in the correct polarity

(c) Ceramic capacitors must be connected in the correct polarity

(d) Mica capacitors are available in capacitance value of 1 to 10 pF

**Ans: b**

**22. The dissipation factor of a good dielectric is of the order of**

(a) 0.0002 (b) 0.002

(c) 0.02 (d) 0.2

**Ans: a**

**23. "The total electric flux through any closed surface surrounding charges is equal to the amount of charge enclosed". The above statement is associated with**

(a) Coulomb's square law (b) Gauss's law

(c) Maxwell's first law (d) Maxwell's second law.

**Ans: b**

**24. Three capacitors each of the capacity C are given. The resultant capacity 2/3 C can be obtained by using them**

(a) all in series (b) all in parallel

(c) two in parallel and third in series with this combination

(d) two in series and third in parallel across this combination

**Ans: c**

**25. For which of the following parameter variation, the capacitance of the capacitor remains unaffected ?**

(a) Distance between plates (b) Area of the plates

(c) Nature of dielectric (d) Thickness of the plates

**Ans: d**

**26. Which of the following statement is true ?**

(a) The current in the discharging capacitor grows linearly

(b) The current in the discharging capacitor grows exponentially

(c) The current in the discharging capacitor decays exponentially

(d) The current in the discharging capacitor decreases constantly

**Ans: b**

**27. Which of the following expression is correct for electric field strength ?**

(a) E = D/E (b) E = D2/t

(c) E = jtD (d) E= nD2

**Ans: a**

**28. In a capacitor the electric charge is stored in**

(a) metal plates (b) dielectric

(c) both (a) and (b) (d) none of the above

**Ans: b**

**29. Which of the following materials has the highest value of dielectric constant?**

(a) Glass (b) Vacuum

(c) Ceramics (d) Oil

**Ans: c**

**30. Which of the following capacitors will have the least variation ?**

(a) Paper capacitor (b) Ceramic capacitor

(c) Silver plated mica capacitor (d) None of the above

**Ans: c**

**31. Which of the following statements is incorrect ?**

(a) The leakage resistance of ceramic capacitors is generally high

(b) The stored energy in a capacitor decreases with reduction in value of capacitance

(c) The stored energy in a capacitor increases with applied voltage

(d) A wire cable has distributed capacitance between the conductors

**Ans: b**

**32. Which of the following capacitors has relatively shorter shelf life ?**

(a) Mica capacitor (b) Electrolytic capacitor

(c) Ceramic capacitor (d) Paper capacitor

**Ans: b**

**33. The sparking between two electrical contacts can be reduced by inserting a**

(a) capacitor in parallel with contacts (b) capacitor in series with each contact

(c) resistance in line (d) none of the above

**Ans: a**

**34. In the case of a loss capacitor, its series equivalent resistance value will be**

(a) small (b) very small

(c) large (d) zero

**Ans: c**

**35. The power dissipated in a pure capacitor is**

(a) zero (b) proportional to applied voltage

(c) proportional to value of capacitance (d) both (b) and (c) above

**Ans: a**

**36. In a capacitive circuit**

(a) a steady value of applied voltage causes discharge

(b) an increase in applied voltage makes a capacitor charge

(c) decrease in applied voltage makes a capacitor charge

(d) none of the above

**Ans: b**

**37. When a dielectric slab is introduced in a parallel plate capacitor, the potential difference between plates will**

(a) remain uncharged (b) decrease

(c) increase (d) become zero

**Ans: b**

**38. Capacitance increases with**

(a) increase in plate area and decrease in distance between the plates

(b) increase in plate area and distance between the plates

(c) decrease in plate area and value of applied voltage

(d) reduction in plate area and distance between the plates

**Ans: a**

**39. A capacitor consists of**

(a) two insulators separated by a conductor (b) two insulators only

(c) two conductors separated by an insulator (d) two conductors only

**Ans: c**

**40. The capacity of capacitor bank used in power factor correction is expressed in terms of**

(a)kW (b) kVA

(c) kVAr (d)volts

**Ans: c**

**41. A paper capacitor is usually available in the form of**

(a) tubes (b) rolled foil

(c) disc (d) meshed plates

**Ans: b**

**42. Air capacitors are generally available in the range**

(a) 10 to 400 pF (b) 1 to 20 pF

(c) 100 to 900 pF (d) 20 to 100 pF

**Ans: a**

**43. The unit of capacitance is**

(a) henry (b) ohm

(c) farad (d) farad/m

**Ans: c**

**44. A capacitor charged to 200 V has 2000 ic of charge. The value of capacitance will be**

(a) 10 F (b) 10 uF

(c) 100 nF (d) 1000 uF

**Ans: b**

**45. A capacitor in a circuit became hot and ultimately exploded due to wrong connections, which type of capacitor it could be ?**

(a) Paper capacitor (b) Ceramic capacitor

(c) Electrolytic capacitor (d) Any-of the above

**Ans: c**

**46. Energy stored in the electric field of a capacitor C when charged from a D.C source of voltage V is equal to joules**

(a) CV2 (b) C2V

(c) CV2 (d) CV

**Ans: a**

**47. The absolute permittivity of free space is given by**

(a) 8.854 x 1(T9 F/m) (b) 8.854 x 1(T10 F/m)

(c) 8.854 x KT11 F/m (d) 8.854 x 10"12 F/m

**Ans: b**

**48. The relative permittivity of free space is given by**

(a) 1 (b) 10

(c) 100 (d) 1000

**Ans: a**

**49. Electric field intensity is a quantity**

(a) scalar (b) vector

(c) both (a) and (b) (d) none of the above

**Ans: b**

**50. When 4 volts e.m.f. is applied across a 1 farad capacitor, it will store energy of**

(a) 2 joules (b) 4 joules

(c) 6 joules (d)8 joules

**Ans:d**