



Department of Electronics and Communication Engineering
EC 8451- Electromagnetic Fields
UNIT II - ELECTROSTATICS
MCQ BANK

1. Coulomb law is employed in
- a) **Electrostatics**
 - b) Magnetostatics
 - c) Electromagnetics
 - d) Maxwell theory

ANSWER: a. Electrostatics

2. For a charge Q1, the effect of charge Q2 on Q1 will be,
- a) $F_1 = F_2$
 - b) **$F_1 = -F_2$**
 - c) $F_1 = F_2 = 0$
 - d) F_1 and F_2 are not equal

ANSWER: b. $F_1 = -F_2$

3. The electric field intensity is defined as
- a) Force per unit charge
 - b) Force on a test charge
 - c) **Force per unit charge on a test charge**
 - d) Product of force and charge

ANSWER: c. Force per unit charge on a test charge

4. What is the electric field intensity at a distance of 20cm from a charge 2×10^{-6} C in vacuum?
- a) 250,000
 - b) 350,000
 - c) **450,000**
 - d) 550,000

ANSWER: c. 450,000

5. Electric field intensity due to infinite sheet of charge σ is
- a) Zero

- b) Unity
- c) σ/ϵ
- d) $\sigma/2\epsilon$**

ANSWER: d. $\sigma/2\epsilon$

6. In electromagnetic waves, the electric field will be perpendicular to which of the following?
- a) Magnetic field intensity
 - b) Wave propagation
 - c) Both H and wave direction**
 - d) It propagates independently

ANSWER: c. Both H and wave direction

7. The lines of force are said to be
- a) Real
 - b) Imaginary
 - c) Drawn to trace the direction**
 - d) Not significant

ANSWER: c. Drawn to trace the direction

8. Electric flux density in electric field is referred to as
- a) Number of flux lines
 - b) Ratio of flux lines crossing a surface and the surface area**
 - c) Direction of flux at a point
 - d) Flux lines per unit area

ANSWER: b. Ratio of flux lines crossing a surface and the surface area

9. The Gaussian surface is
- a) Real boundary
 - b) Imaginary surface
 - c) Tangential
 - d) Normal

ANSWER: b. Imaginary surface

10. A uniform surface charge of $\sigma = 2 \mu\text{C}/\text{m}^2$, is situated at $z = 2$ plane. What is the value of flux density at $P(1,1,1)\text{m}$?
- a) 10^{-6}
 - b) -10^{-6}**
 - c) 10^6
 - d) -10^6

ANSWER: b. -10^{-6}

11. Potential difference is the work done in moving a unit positive charge from one point to another in an electric field. State True/False.

a) True

b) False

ANSWER: a. True

12. The voltage at any point in an ac circuit will be

a) Peak voltage

b) RMS voltage

c) Average voltage

d) Source voltage

ANSWER: b. RMS voltage

13. Inside a hollow conducting sphere

a) Electric field is zero

b) Electric field changes with the distance from the center of the sphere

c) Electric field is non-zero constant

d) Electric field changes with the magnitude of the charge given to the conductor

ANSWER: a. Electric field is zero

14. The drawback of Dalton's Atomic Structure is that, it says

a) Most of the volume of an atom is empty space

b) The atoms can neither be created nor be destroyed

c) Unique nature of the atom

d) None of the answer

ANSWER: b. The atoms can neither be created nor be destroyed

15. Ohm's law in point form in field theory can be expressed as

a) $V=IR$

b) $J=E/I$

c) $R=1/A$

d) $J= \sigma E$

ANSWER: b. $J= \sigma E$

16. Electric field intensity at any point in an electric field is equal to

a) Potential gradient

b) (Potential gradient)²

- c) (Potential gradient)^{1/2}
- d) (Potential gradient)³

ANSWER: a. Potential gradient

17. The continuity equation is a combination

- a) Ohm's law and Gauss law
- b) **Ampere law and Gauss law**
- c) Ohm's law and Ampere law
- d) Maxwell law and Ampere law

ANSWER: b. Ampere law and Gauss law

18. The charge within a conductor will be

- a) 1
- b) -1
- c) 0
- d) ∞

ANSWER: c. 0

19. For a conservative field which of the following equations holds good?

- a) $\int \mathbf{E} \cdot d\mathbf{l} = 0$
- b) $\int \mathbf{H} \cdot d\mathbf{l} = 0$
- c) $\int \mathbf{B} \cdot d\mathbf{l} = 0$
- d) $\int \mathbf{D} \cdot d\mathbf{l} = 0$

ANSWER: a. $\int \mathbf{E} \cdot d\mathbf{l} = 0$

20. The electric flux density of a surface with permittivity of 2 is given by 12 units. What the flux density of the surface in air?

- a) 24
- b) **6**
- c) 1/6
- d) 0

ANSWER: b. 6

21. The given equation satisfies the Laplace equation.

$V = x^2 + y^2 - z^2$. State True/False.

- a) **True**
- b) False

ANSWER: a. True

22. An infinite resistance is considered as an

- a) Closed path (short circuit)
- b) Open path**
- c) Not defined
- d) Ammeter with zero reading

ANSWER: b. Open path

23. The capacitance of a material refers to

- a) Ability of the material to store magnetic field
- b) Ability of the material to store electromagnetic field
- c) Ability of the material to store electric field**
- d) Potential between two charged plates

ANSWER: c. Ability of the material to store electric field

24. The best definition of polarization is

- a) Orientation of dipoles in random direction
- b) Electric dipole moment per unit volume**
- c) Orientation of dipole moments
- d) Change in polarity of every dipole

ANSWER: b. Electric dipole moment per unit volume

25. The Gaussian Surface is

- a) Tangential
- b) Real Boundary
- c) Imaginary surface**
- d) None of the above

ANSWER: b. Imaginary surface