

SSR Degree and PG College(A)
Department of Physics
Semester III Internal I Question Bank

I. Multiple Choice Questions

1. The SI unit of magnetic flux is:

- A) Tesla B) Ampere C) Weber (Wb) D) Joule

Answer: C) Weber (Wb)

2. Magnetic flux is given by:

- A) $\Phi = BA \sin \theta$ B) $\Phi = BA \cos \theta$ C) $\Phi = B/A$ D) $\Phi = B + A$

Answer: B) $\Phi = BA \cos \theta$

3. The Biot–Savart law is used to calculate:

- A) Electric field due to a charge B) Magnetic field due to a current element
C) Electric potential D) Magnetic flux

Answer: B) Magnetic field due to a current element

4. The magnetic field inside a long solenoid is:

- A) Zero B) Uniform C) Random D) Circular only

Answer: B

5. The line integral $\oint \vec{B} \cdot d\vec{l}$ is evaluated over:

- A) An open path B) A closed path C) A surface only D) A volume only

Answer: B

6. The energy stored in an inductor depends on:

- A) Resistance only B) Current and inductance C) Voltage only D) Time only

Answer: B

7. The energy stored in the magnetic field of an inductor is stored in the:

- A) Resistor B) Magnetic field around the coil
C) Battery D) Connecting wires only

Answer: B

8. A ballistic galvanometer is primarily used to measure:

- A) Current B) Voltage C) Quantity of electric charge D) Resistance

Answer: C) Quantity of electric charge

9. Which quantity is directly proportional to the first throw of a ballistic galvanometer?

- A) Resistance B) Potential difference
C) Electric charge passing through the coil D) Power dissipated

Answer: C)

10. A ballistic galvanometer is commonly used to measure:

- A) Magnetic flux B) Temperature C) Pressure D) Frequency

Answer: A) Magnetic flux

11. Two electric field lines can never:

- A) Be parallel B) Be curved C) Intersect each other D) Form closed loops

Answer: C) Intersect each other

12. If no charge is enclosed within a closed surface, the electric flux is:

- A) Positive B) Negative C) Zero D) Infinite

Answer: C) Zero

13. Gauss's law relates electric flux through a closed surface to:

- A) Electric field intensity B) Electric potential
C) Charge enclosed by the surface D) Surface area only

Answer: C) Charge enclosed by the surface

14. Gauss's law is most useful for calculating electric fields with:

- A) Irregular symmetry B) High temperature
C) Spherical, cylindrical, or planar symmetry D) Random charge distribution

15. Torque on a current loop is maximum when the angle between the magnetic moment and magnetic field is:

- A) 0° B) 45° C) 90° D) 180°

Answer: c

16. If the current in the loop is doubled, the torque becomes:

- * A) Half * B) Double * C) Four times * D) Unchanged

17. The electrostatic potential energy of two like charges is:

- A) Zero B) Positive C) Negative D) Infinite

Answer: B

18. If the distance between two like charges is doubled, the potential energy becomes:

- A) Double B) Four times C) Half D) One-fourth

Answer: C

19. Equipotential surfaces are always:

- A) Parallel to electric field B) Perpendicular to electric field
C) At an angle of 45° D) Random

Answer: B) Perpendicular to electric field

20. Which quantity is a scalar?

- A) Electric field B) Electric force C) Electric potential D) Electric flux density

Answer: C) Electric potential

II.Fill in the blanks

1.The mathematical statement of Gauss's law is_____

2.If no charge is enclosed by a Gaussian surface, the electric flux is _____.

Answer: zero

3.Electric flux is maximum when the electric field is _____ to the surface normal.

Answer: parallel

4.The SI unit of linear charge density is _____.

Answer: C/m

5.A _____ Gaussian surface is used for an infinitely long line charge.

Answer: cylindrical

6.Electric potential is a _____ quantity.

Answer: scalar

7.The damping produced due to induced _____ currents is called electromagnetic damping.

Answer: Eddy

8.Electromagnetic damping is based on _____ law of electromagnetic induction.

Answer: Lenz's

9.The minimum damping required to prevent oscillations is called _____ damping.

Answer: Critical

10. The sensitivity of a ballistic galvanometer depends on the _____ of the coil.

Answer: Number of turns

11. The damping in a ballistic galvanometer should be _____.

Answer: Very small (or Low)

12.The reference point for electric potential energy is usually taken at _____.

Answer: Infinity

13. The magnetic field is inversely proportional to the _____ of the distance from the current element.

Answer: square

14.The magnetic field is zero when the current element and position vector are _____ to each other.

Answer: parallel

15.The work done by a conservative electric field around a _____ path is zero.

Answer: closed

16.If the electric field is conservative, its circulation along any closed path is _____.

Answer: zero

17.The electric field is equal to the negative _____ of electric potential.

Answer: gradient

18.The electric field at an equipotential surface has no _____ component along the surface.

Answer: tangential

19.The electric flux through a spherical Gaussian surface of radius r is _____.

Answer: $E(4\pi r^2)$

20.The electric field inside a uniformly charged spherical shell is _____.

Answer: zero