ANSWER

1.A moving chrge produces
- ○ $\vec{E}$- field only
- ✓ $\vec{B}$- field only
- ○ both $\vec{E}$ and $\vec{B}$ fields
- ○ none of these

2.The attraction of parallel currents and the repulsion of antiparallel ones occur due to

- ○ electrostatic force
- ○ charging of the wire
- ✓ magnetic force
- ○ none of these

3.Magnetic force on a charge Q moving with velocity v in a magnetic field B is

- ○ Q $[\vec{E} + (\vec{V} \times \vec{B})]$
- ✓ Q $(\vec{V} \times \vec{B})$
- ○ Q $\vec{E}$
- ○ none of these

4.Magnetic force acting on a charge moving in a magnetic field alone cannot do any work on the

  Charged particle because

- ✓ magnetic force is perpendicular to its velocity perpendicular to its velocity
- ○ direction of magnetic force is opposite for negatively   charged particle.
- ○ magnetic force is perpendicular to magnetic induction.
- ○ none of these.

5. The SI unit of magnetic induction is

- ○ Weber
- ○ Gauss
- ✓ Tesla
- ○ Newton

6. For an infinitely long wire, the magnetic field at a point distant R normally from the wire is $\frac{\mu i}{2\pi R}$.

This relation indicates

- ○ the lines of magnetic induction are parabolic in nature and lying in planes perpendicular to it.
- ○ the lines of magnetic induction are straight and perpendicular to its length.
- ✓ the lines of magnetic induction are circles concentric with wire lying in planes perpendicular to it
- ○ none of these.

7. An electron of charge 'e' rotates n times per second around the nucleus in a circular orbit of radius 'a'. The magnetic field at the position of the nucleus will be

- ✓ $\frac{\mu_0}{2}\frac{en}{a}$
- ○ $\frac{\mu_0}{2}\frac{e}{n}$
- ○ $ne\pi a^2$
- ○ none of these

8. $\vec{\nabla}.\vec{B} = 0$ implies

- ○ there are point sources for magnetic field .
- ✓ magnetic field lines either form closed loops or extend out to infinity.
- ○ the magnetic field diverges away from pole.
- ○ none of these

9. In the Bohr model of the hydrogen atom, an electron of charge 'e' moves with velocity 'v' in a

circular orbit of radius' r' about a stationary proton. Magnetic moment associated with the

orbit will be

- ○ $\frac{2\pi re}{v}$
- ✓ $\frac{evr}{2}$
- ○ $\frac{e\pi r^2}{2v}$
- ○ none of these

10. The unit of magnetic flux in SI system is

- ✓ Tesla
- ○ Newton/metre
- ○ Weber(Wb)
- ○ Gauss

11. Ampere's circuital law states that

- ✓ $\oint \vec{B} \cdot \vec{dl} = \mu_0 I$
- o $\iint \vec{B}.\hat{n}ds = 0$
- o $\vec{\nabla}.\vec{J} = 0$
- o $\vec{\nabla}.\vec{B} = 0$

12. Two parallel wires carry a current I in the same direction. The wires will

- ✓ be attracted
- o be repelled
- o experience no force
- o experience a torque.

13. The variation of magnetic field with the distance from the axis of a long cylindrical wire :

- o The magnetic field is maximum at centre and zero outside the wire.
- ✓ The magnetic field is zero at the centre, maximum at the surface and zero at infinity.
- o The magnetic field is zero at the centre and attains constant value outside the wire.
- o None of these.

14. A small current loop behaves as a magnetic dipole whose dipole moment is

- o the product of the circumference of the loop and the circulating current.
- ✓ the product of the loop area and the circulating current.
- o the product of the half of the loop area and the circulating current.
- o None of these.

15. The differential form of Ampere's law is

- o $\vec{\nabla}.\vec{B} = 0$
- o $\vec{\nabla}.\vec{J} = 0$
- ✓ $\vec{\nabla} \times \vec{B} = \mu_0 \vec{J}$
- o None

16. The magnetic induction $\vec{B}$ and the magnetic vector potential $\vec{A}$ are related by the relation

- ✓ $\vec{B} = \vec{\nabla} \times \vec{A}$
- o $\vec{A} = \vec{\nabla} \times \vec{B}$
- o $\vec{\nabla} \times (\vec{A} \times \vec{B}) = 0$
- o None

17. The SI unit of magnetic vector potential is

- ○ Coulomb
- ○ Weber(Wb)
- ○ Tesla
- ✓ Weber per metre(Wb/m)

18. The magnetization of a material medium occurs due to

- ✓ bound current
- ○ free current
- ○ both bound and free current
- ○ none of these

19. Magnetisation current (I_m) can

- ○ produce joule heating
- ✓ produce magnetic field
- ○ transport charge over macrodistances
- ○ none of these

20. The magnetization ($\vec{M}$) and the magnetization current density ($\vec{J_m}$) is related by the equation

- ○ $\vec{\nabla} \times \vec{J_m} = \vec{M}$
- ○ $\vec{\nabla} \cdot \vec{M} = \vec{J_m}$
- ○ $\vec{\nabla} \times (\vec{J_m} \times \vec{M}) = 0$
- ✓ $\vec{\nabla} \times \vec{M} = \vec{J_m}$