GUJCET 2024 Physics Question Paper March 31, 2024 Shift 1

1. The magnitude of the drift velocity per unit electric field is known as ____.

Ans. Mobility

2. A solenoid has a core of a material with a relative permeability of 400. The solenoid windings are insulated from the core and carry a current of 2A. If the number of turns is 1000 per meter then the value of magnetic intensity will be ____.

Ans. 8 x 105 Am-1

3. A square loop of side 10 cm and resistance 0.5 Ω is placed vertically in the cast-west plane. A uniform magnetic field of 0.10 T is set across the plane in the northeast direction. The magnetic field decreases to zero at 0.70 S at a steady rate. Then the magnitude of the induced current during this time interval will be ____.

Ans. 2.0 x 10-3 A

4. As shown in the circuit diagram, find the value of I _____.

Ans. 2.5 A

5. Vs/Am is the unit of which physical quantity?

Ans. μ0

6. A silver wire has a resistance of 2 152 27,5°C and a resistance of 270 at 100°C Then the temperature coefficient of the resistivity of silver will be _____.

Ans. 3.9 x 10-3 °C-1

7. An ideal ammeter and an ideal voltmeter have resistances of ____ Ω and ____ Ω respectively.

Ans. (0, ∞)

8. A short bar magnet placed with its axis at 30° and a uniform external magnetic field of 0.5T experiences a torque of magnitude equal to 4.5 x 10-2 J Then the magnitude of the magnetic moment of the magnet will be _____.

Ans. 36 x 10-2 JT-1

9. The SI unit of the current density is ____.

Ans. Am-2

10. A coil has N turns and current passes through it is I ampere then we obtain L Henry of self inductance. Now if the current charge to 51, then the new self-inductance will be _____ H.

Ans. L

11. An allure inductor of 50.0 mH is connected to a source of 220 V. Then the rms current in the circuit will be _____. The frequency of the source is 50 Hz.

Ans. 14 A

12. In LCR series a. c. circuit at resonance, the value of power factor will be _____.

Ans. 1

13. For obtaining wattless current ____ is connected with a.c. supply.

Ans. Only L

14. As indicated below which one is the equation of Ampere-Maxwell law?

Ans. $\oint B \cdot dl = \mu 0ic + \mu 0\varepsilon 0\, d\Phi B/dt$

15. parallel plate capacitor with air between the plates has a capacitance of 4 pF If the distance between the plates is reduced by half and the space between them is filled with a substance of dielectric constant 6 un the value of capacitance will be

Ans. 48 pF

16. Tor plane mirror focal length is _____ m.

Ans. ∞

17. A ray coming from an object which is situated at o distance in the air and falls on a spherical glass surface (n=1.5) Then the distance of the image will be _____. R is the radius of curvature of a spherical glass.

Ans. 3R

18. For a thin prism, if the angle of the prism is with a refractive index of 1.6, then the angle of minimum deviation will be _____.

Ans. 2.4°

19. Cellular phones use radio waves to transmit voice communication in the _____ band.

Ans. UHF

20. The phase difference between any two particles in a given wavefront is ____ rad.

Ans. 0

21. To emit an electron from the metal, the minimum electric field required is ____.

Ans. 108 Vm-1

22. Consider a refracting telescope whose objective has a focal length of Im and the eyepiece a focal length of 1cm, then the magnifying power of this telescope will be _____.

Ans. 100

23. The refractive index of glass is 1.6 and the speed of light in glass will be speed of light in vacuum is 3.0 x 108 ms-1.

Ans. 1.88 x 108 m/s

24. Js is the unit of _____ physical quantity.

Ans. Angular Momentum

25. In Young's double-slit experiment, the slits are separated by 0.28 mm, and the screen is placed 1,4 m away. The distance between the central bright fringe and the fourth bright fringe is measured to be 12 cm. Then the wavelength of light used in the experiment is _____.

Ans. 600 nm

26. If the primary coil of a transformer has 100 turns and the secondary has 200 turns. Then for an input of 220 V at 10 A, find the output current, in the step-up transformer.

Ans. 0.5 A

27. A radius of a spherical charged shell is 10 cm and electric potential on its surface is 100 V, then the potential at 2 cm from the centre of the shell will be _____.

Ans. 0 V