

PHYSICS

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

(A) 1

(B) 0

(C) -1

(D) ∞

A

2) 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 output current, in step up transformer.

(A) 50.0 A

(B) 0.05 A

(C) 0.5 A

(D) 5.0 A

D

3) For obtaining wattless current _____ is connected with a.c. supply.

(A) R - L in series

(B) R - C in series

(C) Only L

(D) Only R

C

4) As indicated below which one is the equation of Ampere-Maxwell law?

(A) $\oint \vec{B} \cdot d\vec{l} = \mu_0 i_c + \mu_0 \epsilon_0 \frac{d\phi_E}{dt}$

(B) $\oint \vec{B} \cdot d\vec{l} = \mu_0 i_c + \mu_0 \epsilon_0 \frac{d\phi_B}{dt}$

(C) $\oint \vec{B} \cdot d\vec{A} = \mu_0 i_c + \mu_0 \epsilon_0 \frac{d\phi_E}{dt}$

(D) $\oint \vec{E} \cdot d\vec{l} = \mu_0 i_c + \mu_0 \epsilon_0 \frac{d\phi_E}{dt}$

A

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

(A) HF

(B) UHF

(C) VHF

(D) LF

6) For plane mirror focal length is _____ m.

(A) -1

(B) 1

(C) 0

(D) ∞

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

(A) R

(B) 2R

(C) 3R

(D) 1.5R

8) For a thin prism, the angle of prism is 4° having refractive index 1.6, then the angle of minimum deviation will be _____.

(A) 2.0°

(B) 1.6°

(C) 2.4°

(D) 0.4°

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

- D (A) 50 (B) 1
(C) 200 (D) 100

10) The phase difference between any two particle of a given wave front is _____ rad.

- A (A) 0 (B) π
(C) $\pi/2$ (D) $\pi/4$

11) In a 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 1.2 cm . Then the wavelength of light used in the experiment is _____.

- C (A) 660 nm (B) 550 nm
(C) 600 nm (D) 500 nm

$$v = \frac{c}{n}$$

12) The refractive index of glass is 1.6 then the speed of light in glass will be _____
speed of light in vacuum is $3.0 \times 10^8 \text{ ms}^{-1}$.

B

(A) $1.66 \times 10^8 \text{ ms}^{-1}$

(B) $1.88 \times 10^8 \text{ ms}^{-1}$

(C) $1.22 \times 10^8 \text{ ms}^{-1}$

(D) $1.48 \times 10^8 \text{ ms}^{-1}$

13) Js is the unit of _____ physical quantity.

D

(A) Work function

(B) Rydberg constant

(C) Moment of Inertia

(D) Angular momentum

14) To emit an electron from the metal, minimum electric field required is _____.

B

(A) 10^6 Vm^{-1}

(B) 10^8 Vm^{-1}

(C) 10^5 Vm^{-1}

(D) 10^4 Vm^{-1}

15) A ball of mass 0.12 kg moving with a speed of 20 ms^{-1} has de-Broglie wavelength _____.

A

($h = 6.63 \times 10^{-34} \text{ Js}$)

(A) $2.76 \times 10^{-34} \text{ m}$

(B) $1.76 \times 10^{-34} \text{ m}$

(C) $3.76 \times 10^{-34} \text{ m}$

(D) $4.76 \times 10^{-34} \text{ m}$

16) The ratio of radius for second and third orbit of hydrogen atom is _____.

D

(A) 3 : 2

(B) 2 : 3

(C) 9 : 4

(D) 4 : 9

17) In Geiger-Marsden scattering experiment the thickness of a thin foil of gold is _____ m.

C

(A) 5.5×10^{-7}

(B) 4.2×10^{-7}

(C) 2.1×10^{-7}

(D) 6.2×10^{-7}

18) The ground state energy of hydrogen atom is -13.6 eV, then the potential energy of the electron in this state will be _____.

A

(A) -27.2 eV

(B) 27.2 eV

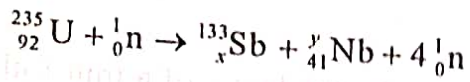
(C) 13.6 eV

(D) -6.8 eV

19) Some atomic species of the same element differing in mass are called _____.

- D
- (A) Isotone (B) Isobar
(C) Isomar (D) Isotope

20) Find the value of x and y from below given nuclear reaction.



- B
- (A) (51, 95) (B) (51, 99)
(C) (92, 1) (D) (133, 41)

21) The ratio of the nuclear radii of the ${}_1^1\text{H}$ and ${}_{13}^{27}\text{Al}$ is _____.

- B
- (A) 1 : 2 (B) 1 : 3
(C) 2 : 1 (D) 3 : 5

22) Which impurity is used to convert pure semiconductor into p-type semiconductor?

- C
- (A) Antimony (B) Arsenic
(C) Indium (D) Phosphorous

23) The energy required for electron to jump the forbidden band for germanium at room temperature in the intrinsic semiconductor is _____ eV.

A

(A) 0.72

(B) 1.1

(C) 5.4

(D) 0.05

24) The Dimensional formula for Electric Flux is _____.

B

(A) $M^1L^1T^{-3}A^{-1}$

(B) $M^1L^3T^{-3}A^{-1}$

(C) $M^{-1}L^{-3}T^3A^1$

(D) $M^1L^3T^{-3}A^1$

25) For an electric dipole an angle between \vec{E} and \vec{P} at a point on the equatorial plane is _____.

A

(A) 180°

(B) 90°

(C) 0°

(D) 45°



26) An infinite line charge produces an electric field of 9×10^4 N/C at a distance of 2 cm. Then the linear charge density will be _____.
($K = 9 \times 10^9$ Nm²/C²)

(A) $10 \mu\text{C/m}$

(B) $1 \mu\text{C/m}$

(C) $0.01 \mu\text{C/m}$

(D) $0.1 \mu\text{C/m}$

27) If an electron is accelerated by a potential difference of 2.5 V it would gain energy of _____.

(Take charge of electron 1×10^{-19} C)

(A) 2.5 MeV

(B) 2.5 J

(C) 2.5 eV

(D) 2.5 erg

28) A radius of 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 _____.

(A) 1 V

(B) 100 V

(C) 200 V

(D) 0 V

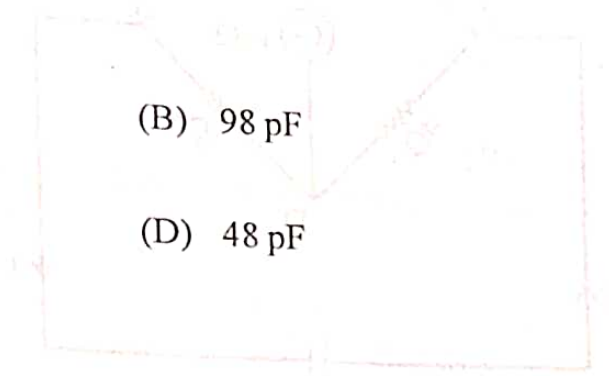
29) A parallel plate capacitor with air between the plates has a capacitance of 4 pF. If the distance between the plates is reduced by half and the space between them is filled with a substance of dielectric constant 6 then the value of capacitance will be _____.

(A) 24 pF

(B) 98 pF

(C) 12 pF

(D) 48 pF



30) The SI units of the current density is _____.

(A) Am^{-1}

(B) Am^2

(C) Am^{-3}

(D) Am^{-2}

31) The magnitude of the drift velocity per unit electric field is known as _____.

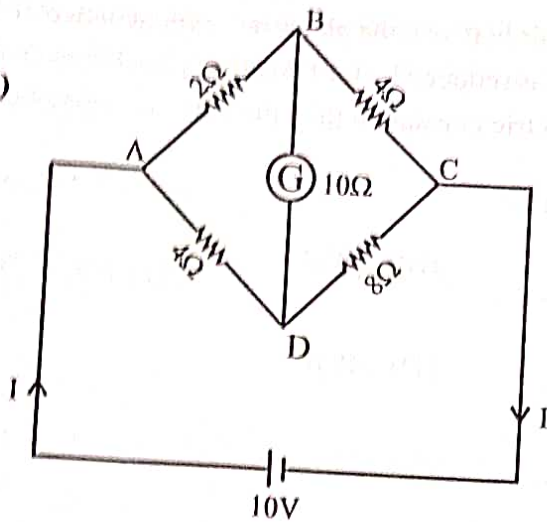
(A) Conductivity

(B) Resistivity

(C) Mobility

(D) Charge density

32)



B

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

- (A) 0.4 A
- (B) 2.5 A
- (C) 1.8 A
- (D) 2.8 A

33) A silver wire has a resistance of 2.1Ω at 27.5°C and a resistance of 2.7Ω at 100°C . Then the temperature coefficient of resistivity of silver will be _____.

B

- (A) $3.9 \times 10^3 \text{ }^\circ\text{C}^{-1}$
- (B) $3.9 \times 10^{-3} \text{ }^\circ\text{C}^{-1}$
- (C) $3.9 \times 10^{-3} \text{ }^\circ\text{C}$
- (D) $3.9 \times 10^3 \text{ }^\circ\text{C}$

34) $\frac{Vs}{Am}$ is the unit of which physical quantity?

A

- (A) μ_0
(C) χ_e

(B) ϵ_0

(D) χ_m

35) An ideal ammeter and an ideal voltmeter has resistance _____ Ω and _____ Ω respectively.

D

(A) $(\infty, 0)$

(B) $(0, 0)$

(C) (∞, ∞)

(D) $(0, \infty)$

36) A solenoid has a core of a material with relative permeability 400. The windings of the solenoid 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 _____.

B

(A) $2 \times 10^3 \text{ Am}^{-1}$

(B) $8 \times 10^5 \text{ Am}^{-1}$

(C) $2 \times 10^{-3} \text{ Am}^{-1}$

(D) $8 \times 10^{-5} \text{ Am}^{-1}$

37) A short bar magnet placed with its axis at 30° with a uniform external magnetic field of 0.5T experiences a torque of magnitude equal to $4.5 \times 10^{-2} \text{ J}$. Then the magnitude of magnetic moment of the magnet will be _____.

D

(A) $36 \times 10^{-2} \text{ JT}^{-1}$

(B) $3.6 \times 10^2 \text{ JT}^{-1}$

(C) $1.8 \times 10^2 \text{ JT}^{-1}$

(D) $18 \times 10^{-2} \text{ JT}^{-1}$

38) A square loop of side 10 cm and resistance 0.5Ω is placed vertically in the east-west plane. A uniform magnetic field of 0.10 T is setup across the plane in the north-east direction. The magnetic field is decreased to zero in 0.70 S at a steady rate. Then the magnitude of induced current during this time interval will be _____.

(A) $4.0 \times 10^{-3} \text{ A}$

(B) $2.0 \times 10^{-3} \text{ A}$

(C) $6.0 \times 10^{-3} \text{ A}$

(D) $8.0 \times 10^{-3} \text{ A}$

B

39) A coil has N turns and current passes through it is I ampere then we obtain L Henry of self inductance. Now if current charge to $5I$ then new self inductance will be _____ H.

(A) $1/5 L$

(B) $5 L$

(C) $25 L$

(D) L

D

40) A pure inductor of 50.0 mH is connected to a source of 220 V . Then rms current in the circuit will be _____. The frequency of the source is 50 Hz .

(A) 7 A

(B) 28 A

(C) 14 A

(D) 21 A

C

$$\frac{220}{314 \times 50 \times 10^{-3}}$$