PHYSICS

BOOKS - UNITED BOOK HOUSE

MODEL PAPER SET-17

Exercise

1. An aeroplane has its wing span of 36m.If if move with a velocity of $400 km/hr$,what will be its induced emf? $\left(B_v = 4 \times 10^{-5} T\right)$-

A. 16V

B. 1.6V

C. 0.16V

D. None of these

Answer:

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2. At any point the electrical potential is $V = 3x + 2y^2$ at (3, 1) point what will be the field?—

A. $3Vm^{-1}$

B. $5Vm^{-1}$

C. $2Vm^{-1}$

D. $\sqrt{5}Vm^{-1}$

Answer:

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3. At time t the magnetic flux is given by-$\phi = 5t^3 - 100t + 300$. What will.be the induced emf after 3 sec?

A. 10V

B. 20V

C. 35V

D. 70V

Answer:

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4. If the following disintegrations happen to an

element   of   Z=   92   :

$\alpha, \beta^{-1}, \beta^{-1}, \alpha, \alpha, \alpha, \alpha, \alpha, \beta^{-}, \beta^{-}, \alpha, \beta^{+}, \beta^{+}, \alpha$

. Then what will be the final Z?—

A.

B.

C.

D.

Answer:

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5. A prism of refractive index 1.414 has the angle of prism A= $60°$. In order that a ray suffers minimum deviation it should be incident at an angle:

A. $45°$

B. $60°$

C. $90°$

D. $180°$

Answer:

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6. What is the momentum for a photon having frequency γ ?

A. $\dfrac{hy}{c}$

B. $h\dfrac{\lambda}{c}$

C. $h\dfrac{c}{v}$

D. $h\delta$

Answer:

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7. What is the binary equivalent of 0.75

A. 0.11

B. 0.101

C. 0.011

D. 0.10

Answer:

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8. What will be the focal length of a piano convexlens (f = 20 cm) if the plane side is silvered?

A. 20cm

B. 40cm

C. 30cm

D. 10cm

Answer:

9. A bubble is charged to have potential of 36V. if the radius is dobled then what will be its potential?

A. 36V

B. 18V

C. 9V

D. 0volt

Answer:

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10. At any place the horizontal component of earth is $\sqrt{3}$ times the vertical one. What is the angle of dip at that place?—

A. $30°$

B. $60°$

C. $45°$

D. $90°$

Answer:

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11. An electric dipole is kept in the uniform electric field $\vec{E}$. If $\vec{p}$ be its dipole moment, then show that the torque experienced by tfte dipole is $\vec{\tau} = \vec{p} \times \vec{E}$.

A. $\vec{\tau} = \vec{p} \times \vec{F}$

B. $\vec{\tau} = \vec{p} . \vec{F}$

C. $\vec{\tau} = \vec{p} + \vec{F}$

D. 0

Answer:

12. Which has the unit of 1 wb/m^2?

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13. What is the difference between p type and n type semiconductor with respect to doping?

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14. When a shunt S is connected across gaivanomenter of resistence G, $\dfrac{1}{n}$ of the main

current passes through the galvanometer. What is the relation between S and G?

15. Show that the rate of heat produced for ,any battery of emf E and internal resistance R will maximum for R = r

16. Twelve, resistances of same value r are connected, so that we can get a cubic structure. What will be the equivalent resistance between two sides of the diagonal .

17. If in air medium the amplitude of the electric field is $5 \times 10^{-4} v/m$, then what will be the amplitude of the magnetic field?

18. Proof that, the de Broglie, wavelength for an electron moving through the potential difference of V is given by $\lambda = \dfrac{h}{\sqrt{2meV}}$. From this equation show that for electron its value is. $\lambda = \dfrac{1227}{\sqrt{V}}\overset{\circ}{A}$

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19. State, Gauss theorem. What is theflux through area x-y plane of area $50m^2$ for Electric field $\overrightarrow{E} = 3\hat{i} + 2\hat{j} + \hat{k}\,Vm^{-1}$

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20. By a battery a capacitor of 900pF as connected by a 100 volt. What is the energy stored in the capacitor?

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21. What is critical angle?

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22. The threshold wave length for any metal is 400 nm. If 200 nm of U.V. light is incident on -the object? then what will be the maximum kinetic energy if the electrons $\left[h - 6.63 \times 10^{-34} J. S\right]$

23. Write down the relation between radius of the nucleus and mass number of an atom. What is isotone? Give an example.

24. What is a NOR Gate? Give its truth table.

25. for two different wires-the length, radius and resistivity are in the ratio $2:1$. If one of then has resistance of 10Ω, What will be the resistance of the other?

26. Obtain for the expression from drift velocity the vector form of ohm's Law.

27. 5V potential difference is applied to a conductor of Length 10cm.If the drift velocity be $2.5 \times 10^{-2} c \frac{m}{s}$, then what will be its mobility?

28. Find out the expression for rms current for AC current form?

29. AC voltage is applied on purely inductive circuit of inductance L. If the voltage be $e = E_0 \sin(\omega t)$ then show mathematically current lags behind the voltage by a phase difference $\dfrac{\pi}{2}$

30. If AC voltage of frequency 50Hz is applied on any inductor of 100mH, what will be the inductive reactance?

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31. For a thin prism the refractive angle is $10°$ .If red and violet are the two light refracted from that prism then what will be the angular dispersion? ($\mu r = 1.627$, $\mu_v = 1.648$).

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32. Define - dispersion of light

33. For a concave mirror, prove that $\dfrac{1}{u} + \dfrac{1}{v} = \dfrac{1}{f}$, where u, v and f have their usual meanings.