



PHYSICS

BOOKS - UNITED BOOK HOUSE

MODEL PAPER SET-16

Exercise

1. What is the dimension of ϵ_0 ?

A. $M^{-1}L^{-3}T^4I^2$

B. $ML^3T^{-4}I^{-2}$

C. $M^{-2}L^{-3}T^{-4}I^2$

$$D. M^0 L^0 T^0 I^0$$

Answer:



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2. The internal resistance of a cell of $emf E$ is r , and external resistance is R . What is the potential about the external Resistance

$$A. V = \frac{E}{\left(1 + \left(\frac{r}{R}\right)^2\right)}$$

$$B. V = \frac{E}{1 + \left(\frac{r}{R}\right)}$$

$$C. V = \frac{E}{1 + \left(\frac{R}{r}\right)}$$

$$E^+$$

D. $I R$

Answer:



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3. If the force between the two parallel wires having carrying current, is F , then what will be the force if the current is doubled?

A. $\frac{F}{2}$

B. $4F$

C. F

D. $2F$

Answer:



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4. What is the condition for wattless current?

A. $L = 0$

B. $C = 0$

C. $R = 0$

D. $L = C$

Answer:



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5. What is the velocity of E.M. wave in air medium-

A. $\frac{1}{\mu_0 \epsilon_0}$

B. $\sqrt{\mu_0 \epsilon_0}$

C. $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$

D. $(\mu_0 \epsilon_0)$

Answer:



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6. The wavelength for a light in air is $7200\overset{\circ}{\text{A}}$. What will be its wavelength in glass ($\mu = 1.5$)?—

A. 7200\AA

B. 7201.5\AA

C. 4800\AA

D. 5867\AA

Answer:



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

A. $\frac{h\gamma}{e}$

B. $\frac{ht}{\lambda}$

C. $\frac{hc}{\lambda}$

D. $\frac{h\gamma}{c}$

Answer:



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8. Which one of the following does not obey the particle nature of Pigut?

A. Photo electric effect

B. Polarisation

C. Compton effect

D. Blackbody Radiation,

Answer:



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9. If the radius of first Bohr orbit of H is $0.53\overset{\circ}{\text{A}}$, then what will be its Radius of 10th Bohr orbit?—

A. $530\overset{\circ}{\text{A}}$

B. $0.053\overset{\circ}{\text{A}}$

C. $5.3\overset{\circ}{\text{A}}$

D. $53\overset{\circ}{\text{A}}$

Answer:



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10. For any transistor $\alpha = 0.96$, what is the value of its β ?—

A. 6

B. 12

C. 24

D. 48

Answer:



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11. Where the value of angle of Dip is Maximum?



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12. When two conducting wires used to attract each other?



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13. For any-AC wave the effective voltage is how much of the peak value?



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14. In what condition a convex lens behave like a concave one? ,

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15. In Boolean Algebra— $(1011)_2 + (1101)_2 = [?]_{10}$.

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16. A silver wire has a resistance of of 2.1Ω at $27.5^\circ C$ and a resistance of 2.7Ω at $100^\circ C$. Find out the temperature coefficient of resistivity of silver.

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17. How to convert a galvanometer into a voltmeter?

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18. A wire of length l is bent to form a circular, form of radius R . If I be the current through the loop then what will be its magnetic moment?

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19. The form of an electromagnetic wave is—
 $B = 10 \times 10^{-7} \sin\{2 \times 10^{11}t - 10^3x\}$ T. What is the expression-for electric vector ?



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20. An electron of H_1^1 atom is on the 4th excited state.

How many spectrum can be observed?



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21. Find out the binding energy- of the, nuclens t

$$Fe_{26}^{56} [Fe^{56}] = 55.934939u, m_p = 1.00783, m_n = 1.00867u$$



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22. State the Gauss's theorem. Find out the expression for electric field' inside and outside of a spherical shell.



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23. Give the definition of electric potential.



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24. What is the magnitude of electric field necessary to just support a water drop of mass 10^{-7} kg and charge $1.6 \times 10^{-19} \text{ C}$? [Neglect air viscosity]



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25. A charged capacitor shares its charge with another capacitor of capacitance twice of its magnitude. What will be change in the energy of the capacitors in this case?



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26. State the Ampere's circuital law Obtain for the magnetic field at the point on axis of a solenoid.



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27. A light of 5000\AA is incident on the double slit and a fringe is observed on a screen 2m apart of fringe width 0.16mm. What is the slit width?



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28. For a transparent crystal, the critical angle is 30° . What will be the value of polarising angle for that crystal?



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29. Proof that, the de Broglie, wavelength for an electron moving through the potential difference of V is

given by $\lambda = \frac{h}{\sqrt{2meV}}$. From this equation show that

for electron its value is. $\lambda = \frac{12.27}{\sqrt{V}} \text{ \AA}$



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30. Write the radioactive disintegration Law. $\frac{3}{4}$ th of a radioactive element is disintegrated in $\frac{3}{4}$ see. What will be its half life?



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31. Draw the truth table for NOR gate.



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32. What do you mean by depletion region? Why with rise of temperature, the resistivity of semiconductors decrease?



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33. A Cu wire of cross sectional area 1mm^2 is carrying current 0.21A. What is the drift velocity of the free

ejectrons in the wire?. Electron density of

$$Cu = 8.4 \times \frac{10^{28}}{m^3}.$$



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34. If the mains rating is, 220V, 50Hz then what is the expression for instantaneous current equation?



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35. Why 220V AC is dangerous than 220V DC?



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36. Magnetic flux passing through a coil is initially 4×10^{-4} Wb. It reduces to 10% of its original value in 't' second. If the e.m.f. induced is 0.72 mV then find 't' in seconds.



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37. For any LCR circuit $L = 0.405\text{H}$ and $C = 25\mu\text{F}$. If the resistance is zero then what is the value of the resonance frequency?



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38. A transformer is active between the voltage 230V. If the turn ratio of coils in primary and secondary coil 1:10 then what is the current is primary coil if the secondary coil has current 2A?



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39. If in a plano-convex lens, the radius of curvature of the convex surface is 10cm and the focal length of the lens is 30cm, then what is the refractive index of the material of lens ?



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