



PHYSICS

BOOKS - UNITED BOOK HOUSE

MODEL PAPER SET-12

Exercise

1. What is the ratio of the charge for two spheres of radius r_1 and r_2 having equal surface charge densities—

A. $\frac{r_1}{r_2}$

B. $\frac{r_2}{r_1}$

C. $\frac{r_1^2}{r_2^2}$

D. $\frac{r_2^2}{r_1^2}$

Answer:



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2. q charge is projected towards a charge Q (fixed) . With the velocity v for the minimum

distance r . What is the distance if the velocity of projection be $2V$?

A. r

B. $\frac{r}{2}$

C. $\frac{r}{4}$

D. $2r$

Answer:



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3. The power of a bulb connected to 120V mains is 60W. What will be its power for 220V mains:

A. 15W

B. 30W

C. 201W

D. 240W

Answer:



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4. Which is not the unit of magnetic permeability?

A. $WbA^{-1}m^{-1}$

B. Hm^{-1}

C. TmA^{-1}

D. Am^{-1}

Answer:



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5. Which type of magnetic materials possess curie point?

A. Ferromagnetic

B. Paramagnetic

C. Diamagnetic

D. all of the above

Answer:



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6. The inductor coils of inductance L are connected in parallel combination. What will be the resultant inductance?

A. $2L$

B. $\frac{L}{4}$

C. L

D. $\frac{L}{2}$

Answer:



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7. The form of current

$I = I_1 \cos wt + I_2 \sin wt$. What is the value of rms current?

A. $\frac{I_1 + I_2}{2}$

B. $\frac{I_1 + I_2}{\sqrt{2}}$

C. $\frac{\sqrt{I_1^2 + I_2^2}}{2}$

D. $\frac{\sqrt{I_1^2 + I_2^2}}{\sqrt{2}}$

Answer:



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8. The peak of magnetic field for any electromagnetic wave is 20 nT. What will be the peak value of the electric field?

A. $9Vm^{-1}$

B. $12Vm^{-1}$

C. $3Vm^{-1}$

D. $6Vm^{-1}$

Answer:



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9. Two polaroids are placed at 90° . If one is moved by 45° then what will be the fraction of emergent ray to the incident ray—

A. 0.15

B. 0.25

C. 0.5

D. 0.6

Answer:



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10. What is the dimension of Magnetic pole strength?



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11. What is the relation between Weber and Testa?



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12. What is the power and focal length- of a parallel glass slab?



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13. An electron enters $5\hat{i}$ T magnetic field with the velocity $4\hat{i}m/s$. What is the value of force on the electron? Find out its direction.



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14. The magnetisation inside a material is $100A/m$ and its susceptibility is 100. What will be the value of magnetic field inside that substance?



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15. Define Poynting Vector? What is its unit?



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16. Find out the dimension of $\mu_0 \epsilon_0$.



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17. Why satellites are used to transmit TV waves at long Distances?



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18. The parallel plate capacitors of capacitances C and $2C$ are connected in

parallel and charged to a potential difference V by a battery. The battery is disconnected and the space between the plates of capacitance C is filled with a dielectric of dielectric constant K . Find the potential difference across the combination now.



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19. In a Van de graph generator the charged-shell has potential, 15×10^5 volt. The

electric field outside the shell is $5 \times 10^7 \text{ V m}^{-1}$

. What is the minimum radius of shell?,



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20. Two straight parallel wires are carrying current I and they are r apart. What will be the force on one due to the other per unit length?



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21. A triangular (equilateral) shaped wire carries current I . What will be the magnetic induction vector at its centroid?



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22. In Young's Double Slit experiment, the two sources, have intensities in the ratio $n:1$. What will be the ratio of maximum and minimum intensities?



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23. Distinguish between E-Ray and O-Ray
.Define Brewster angle.



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24. For any metal the photoelectric threshold wavelength is $3800\overset{\circ}{\text{Å}}$. An ultraviolet wave of wavelength $2000\overset{\circ}{\text{Å}}$ is incident on the metal then what will be- the maximum kinetic energy of the photoelectrons.

[given— $h = 6.62 \times 10^{-34} J. S$]



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25. In any nuclear reaction $\frac{1}{1000}$ of a mass is converted into energy. If the mass of the object is 1g then what will be its energy in MeV..



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26. What is NAND Gate? Give its truth table and logic circuit.



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27. Construct AND and NOT gate by using the NOR gate only.



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



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29. What is Snell's Law?



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30. Find out the average current in half circle for the current in half circle for the current $i = i_0 \sin wt$.



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31. In LCR circuit $C = 0.1\mu F$, $L = 0.25$ H and $R = 10\Omega$. Then what is the Value of resonance frequency?



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