



PHYSICS

BOOKS - R G PUBLICATION

SAMPLE PAPERS

Exercise

1. What is electric charge?



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2. Answer the following questions : Define electrostatic potential.



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3. Answer the following questions : Differentiate between emf and potential difference.



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4. What is the principle employed in a mass spectrometer?



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5. Answer the following questions : What is geographic meridian?



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6. Answer the following questions : State Faraday's law of electromagnetic induction.



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7. Answer the following questions : What is peak value of 220V a.c ?



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8. What typed of waves are used in telecommunication?



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9. What is myopia? How it can be removed?



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10. What is the main condition for interference?



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11. Deduce the expression $\tau = P \times E$



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12. Answer the following questions : Calculate the electric dipole moment of an electron and proton 5 mm apart.



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13. Distinguish between a dielectric substance and conductor.



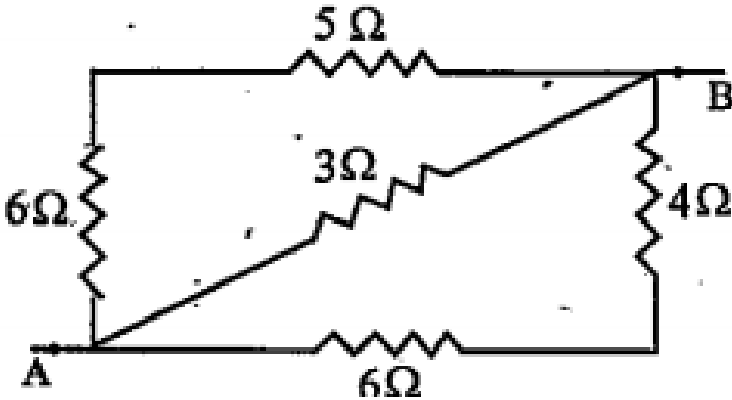
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14. Answer the following questions : Obtain an expressions for equivalent resistance of four conductor when they are connected in series.



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15. Find the equivalent resistance across A and B in the circuit.



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16. State Kirchhoff's voltage law and mention its significance.

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17. Explain the main function of electric and magnetic fields in a cyclotron.



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18. Answer the following questions : State Faraday's law of electromagnetic induction.



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19. Answer the following questions : What is energy band gap? Describe with a diagram.



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20. The magnetic field in a plane electromagnetic wave is given by

$$B_y = 3 \times 10^{-7} \sin(0.3 \times 10^2 x + 0.8 \times 10^{12} t)$$

what is the wavelength and frequency of the wave.



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21. An electron is moving with a velocity $(3\hat{i} + 3\hat{j})\text{ms}^{-1}$ in an electric field $3\hat{i} + 6\hat{j} + 2\hat{k}$ and a magnetic field $2\hat{j} + 3\hat{k}$. Calculate the magnitude of the force.



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22. Consider a bar magnet of length l and magnetic moment m at a distance r from its mid point, where $r \gg l$. Show that the magnetic

field B due, to this bar is

$$\vec{B} = \frac{\mu_0 \vec{m}}{4\pi r^3} \mu_0 \text{ along equator.}$$



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23. An ac voltage is applied to a series of LCR circuit. Determine the instantaneous current i and its phase relationship to the applied alternating voltage v .



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24. Answer any five question : Obtain the resonance frequency of a series LCR ckt with $L = 2H$, $C = 32\mu F$ and $R = 10\Omega$. What is the Q value of this ckt.



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25. Deduce the familiar thin lens formula

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$



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26. Find the value of angle of minimum deviation of a prism.[Given $\mu = \sqrt{2}$, $A = 60^\circ$]



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27. What is the relation between α and β ?



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28. How transistor can be used an amplifier?



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29. Derive OR, AND and NOT gate from NOR gate.



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30. Draw the input and output characteristics of transistor.



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31. Define signal. What are analog and digital signals?



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32. Describe Young's double slit experiment and determine the conditions for obtaining bright and dark fringes.



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33. Write a short note on atomic spectra.



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34. Deduce the equation $R = R_0 e^{-\lambda t}$



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35. Give the experimental study of photo electric effect. Draw the variation curve photo electric current with intensity of light.



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