



PHYSICS

BOOKS - OSWAAL PUBLICATION

PHYSICS (KANNADA ENGLISH)

Sample Paper 6

Exercise

1. How does the resistance of a conductor vary with the increase of temperature ?



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2. Write full form of the following modes of modulation used for pulsed carries wave: PTM



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3. Write full form of the following modes of modulation used for pulsed carries wave: PCM



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4. How is the power of lens related to its focal length ?



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5. Name the anti-particle of an electron.



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6. What is the smallest electric charge carried by a body?





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7. Name the characteristics of electromagnetic waves that increases. In the electromagnetic spectrum as one moves from radiowave region towards ultraviolet region.



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8. Name the characteristics of electromagnetic waves that remains constant. In the

electromagnetic spectrum as one moves from radiowave region towards ultraviolet region.



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9. A nucleus undergoes β^- - decay. How does its mass number



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10. A nucleus undergoes β^- - decay. How does its atomic number change?



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11. Name the scientist who confirmed the existence of electromagnetic wave experimentally.



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12. A brass wire coil is pulled in a magnetic field with a definite velocity. If the Ohmic resistance of the coil increased, will it be

easier to pull it? If the magnetic field be doubted then how much force will be applied?



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13. What is magnetic susceptibility? For which material is it low and positive?



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14. Draw the ray diagram to show the experimental arrangement to obtain a pure

spectrum produced by a prism.



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15. Write two properties of equipotential surfaces. Depict equipotential surface due to an isolated point charge. Why do the equipotential surfaces get closer as the distance between the equipotential surface and the source charge decreases?



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16. State Lenz's Law. A metallic rod held horizontally along east-west direction, is allowed to fall under gravity. Will there be an emf induced at its ends? Justify your answer.



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17. Draw the block diagram of generalised communication system.



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18. Obtain an expression for the capacitance of a spherical conductor.



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19. (i) Define modulation index.

(ii) Why is the amplitude of modulating signal kept less than the amplitude of carrier wave ?



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20. Why is the amplitude of modulating signal kept less than the amplitude of carrier wave?



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21. Draw Wheatstone bridge and write the condition for balance.



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22. Derive the expression for the energy stored in a parallel plate capacitor with air between the plates. How does the stored energy change if air is replaced by a medium of dielectric constant K ?



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23. Explain the construction of transformer. Mention its principle.



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24. Define dielectric constant of a medium. Briefly explain why the capacitance of a parallel plate capacitor increases, on introducing a dielectric medium between the plates.



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25. Write any four characteristics of electromagnetic waves. Give two uses each of Radio-waves.



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26. Write any four characteristics of electromagnetic waves. Give two uses each of Micro-wave.



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27. Name the phenomenon in which an emf is induced in a coil due to the change of current in the same coil.



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28. Explain the use Zener diode as a voltage regulator.



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29. Write Einstein's photoelectric equation and point out any two characteristic properties of photons on which this equation is based.



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30. State radioactive decay law. Derive

$N = N_0 e^{-\lambda t}$ for a radioactive element



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31. Derive the expression for lateral shift produced when a ray of light passes through a parallel sided slab.



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32. What is amplification? With a circuit diagram, explain the working of npn transistor as an amplifier in CE configuration.



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33. Explain the experiment to determine the resistivity of the material of the wire using meter bridge.



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34. A small compass needle of magnetic moment m is free to turn about an axis perpendicular to the direction of uniform magnetic field B . The moment of inertia of the needle about the axis is I . The needle is slightly disturbed from its stable position and then released. Prove that it executes simple harmonic motion. Hence deduce the expression for its time period.



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35. A compass needle, free to turn in a vertical plane orients itself with its axis vertical at a certain place on the earth. Find out the values of horizontal component of earth's magnetic field and



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36. A compass needle, free to turn in a vertical plane orients itself with its axis vertical at a

certain place on the earth. Find out the values of angle of dip at the place.



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37. Using Bohr's postulates, derive the expression for the frequency of radiation emitted when electron in hydrogen atom undergoes transition from higher energy state (quantum number n_1) to the lower state (n_f).
When electron in hydrogen atom jumps from energy state $n_1 = 4$ to $n_f = 3, 2, 1$, identify

the spectral series to which the emission lines belong.



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38. An a.c. source of 220 V, 50 Hz is connected to a series combination of 50Ω resistor, 20 micro farad capacitor and 10 mH inductor respectively. Calculate the current through the combination.



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39. Point charges of 10nC , 20nC and 10nC are kept at the corners A, B, C of a square ABCD of side 3m . Calculate the magnitude of the resultant electric intensity at D.



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40. A battery of internal resistance 3Ω is connected to 20Ω resistor and the potential difference across the resistor is 10V . If another resistor 30Ω is connected in series with the first resistor and battery is again connected to

the combination, then calculate the e.m.f and terminal potential difference across the combination..



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