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PHYSICS

BOOKS - OSWAAL PUBLICATION PHYSICS (KANNADA ENGLISH)

2016 Solved Paper 1

Exercise

1. State Faraday's law of electromagnetic induction.

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2. Whrite the expression for displacement current or Maxwell's displacement current.

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3. What is an electric dipole ?

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4. Draw the circuit symbol of p-n- p transistor.

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5. How can the resolving power of a telescope be increased ?

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6. Define magnetisation of a sample.

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

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8. What is a cyclotron?

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9. What is the wavelength range of X-rays ?

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10. The current in coil of self inductance 5 mH changes from 2.5 A to 2.0 A is 0.01 second. Calculate the value of self induced e.m.f.

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11. What is toroid? Mention an expression for magnetic field at point inside a toroid.

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12. Define isotopes and isobars

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13. Draw the variation of magnetic field(B) with magnetic intensity(H) when ferromagnetic material is subjected to a cycle of magnetisation.

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14. Mention any three application of polaroids

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15. What is a NAND gate? Write its circuit symbol and truth table for two inputs.

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16. Mention and five properties of electric field lines.

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17. What is 'myopia' ? How to rectify it?

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18. What is a transformer ? Mention two sources of energy loss in a transformer

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19. What are the characteristics of nuclear forces?

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20. Derive the expression for energy stored in a charged capacitor.

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21. What is an amplifier? Draw the simple circuit of transistor amplifier in CE mode.

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22. Mention the types of transmission media.

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23. Arrive at an expression for drift velocity.

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24. Describe the coil and barmagnet experiment to demonstrate the phenomenon of electromagnetic induction.

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25. Write any four properties of ferromagnetic materials and give an example for it.

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26. Deduce the condition for balance of a wheatstone's bridge using Kirchoffs rules .

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27. Obtain an expression for the force between two straight parallel conductor carrying current. Hence define ampere.

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28. Derive an expression for electric field due to an electric dipole at a point on the axial line.

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29. Write the experimental observations of photoelectric effect.

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30. What is a rectifier ? With suitable circuit describe the action of a full wave rectifier by drawing input and output waveforms.

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31. Derive the expression for effective focal length of two thin lenses kept in contact.

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32. In Young's double slit experiment, fringes of certain width are produced on the screen kept at a certain distance from the slits. When the screen is moved away from the slits by 0.1m, fringe width increases by $6 \times 10^{-5} m$. The separation between the slits is 1 mm. calculate the wavelength of the light used.

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33. When two capacitors are connected in series and connected across 4kV line, the energy stored in the system is 8 J. the same capacitors, if connected in parallel across the same line, the energy stored in 36 J. find the individual capacitances.

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34. Calculate the shortest and longest wavelength of Balmer series of hydrogen

atom. Given $R = 1.097 \times 10^7 m^{-1}$.

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35. Calculate the resonent frequency of Q-factor (Quality factor) of a series L-C-R circuit containing a pure inductor of inductance 4H, capacitor of capacitance 27 μF and resister of resistance 8.4Ω.

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36. (a) Three resistors of resistance $2\Omega, 3\Omega$ and 4Ω are combined in series. What is the total resistance of the combination ?

(b) It this combination is connected to a battery of emf 10 V and negligible internal resistance, obtain the potential drop across each resistor.

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