PHYSICS

BOOKS - OSWAAL PUBLICATION PHYSICS (KANNADA ENGLISH)

Sample Paper 4

Exercise

1. What is the electric field inside a conductor ?

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2. How does the resistivity of a conductor vary with temperature?

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3. State and explain Gauss's law in magnetism.

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4. Mention any three application of eddy currents.

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5. Which type of lens is used to correct myopia(short sightedness) ?

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6. What is the rest mass of photon?

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7. Write three postulates of Bohr. Mention two limitation of Bohr model.

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8. Define mean life of a radioactive element.

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9. write the symbol of NAND gate .

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10. What is attenuation in communication system ?

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11. Write Coulomb's law in vector form and explain the terms.

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12. Mention two limitations of Ohm's law.

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13. Write any two differences between diamagnetic and paramaganetic substances.

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14. Current in a coil falls from 5 A to 0 A in 0.1 s, calculate the induced emf in a coil if its self inductance is 4H.

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15. Give two uses of UV rays.

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16. Draw the ray diagram for the formation of image in case of a concave mirror when the object is placed at the centre of curvature of a mirror.

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17. Distinguish between extrinsic and intrinsic semiconductors.

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18. Write the block diagram of a transmitter.

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19. Derive the relation between electric field and electric potential.

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20. Arrive at the expression for velocity selector using Lorentz force.

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21. Mention any three salient features of Hysteresis loop.

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22. Derive the expression for motional emf induced in a conductor moving in a uniform magnetic field.

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23. Mention one power loss in transformer.

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24. Using Huygen's wave theory of light, show that the angle of incidence is equal to angle of reflection in case of reflection of a plane wavefront by a plane surface.

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25. Write Einstein's photoelectric equation. State clearly how this equation is obtained using the photon picture of electromagnetic radiation.

Write the three salient features observed in photoelectric effect which can be explained using this equation.

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26. Explain the working of a zener diode as a voltage regulator.

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

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28. Obtain an expression for the equivalent emf and internal resistance of two cells connected in parallel.

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29. Derive the expression for magnetic field at a point on the axis of a circular current loop.

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30. what is interference ? Write the condition for path difference in case of constructive and destructive interference.

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31. Obtain an expression for the total energy of an electron in the n^{th} orbit of hydrogen atom in terms of absolute constants.

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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. Two point charges $5 \times 10^{-8} C$ and $3 \times 10^{-8} C$ are locate 16 m apart. At what points on the line joining the two charges is the electric potential zero ?

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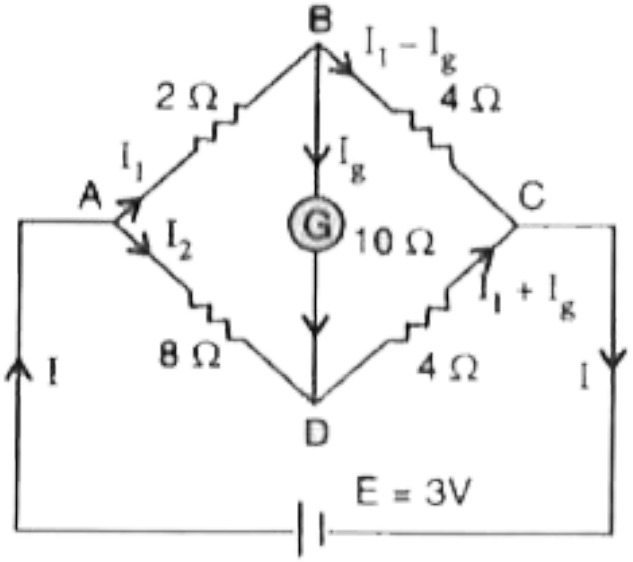
34. Determine the current through the galvanometer in the circuit. Given : $P = 2\Omega, Q = 4\Omega, R = 8\Omega S = 4\Omega G = 10\Omega, E = 5$ and $r = 0$.



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35. Obtain the resonant frequency ω_r of a series LCR circuit with L = 2.0 H. $C = 32\mu F$, and $R = 10\Omega$. What is the Q - value of this circuit?

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36. An object of size 3.0cm is placed 14cm in front of a concave lens of focal length 21cm. Describe the image produced by the lens. What happens if the object is moved further away from the lens?

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37. Consider the fission of $^{238}_{92}U$ by fast neutrons. In one fission event, no neutrons are emitted and the final end products, after the beta decay of the primary fragments, are $^{140}_{58}Ce$ and $^{99}_{44}Ru$. Calculate Q for this fission process. The relevant atomic and particle masses are

$m\left(^{238}_{92}U\right) = 238.05079u$

$m\left({}_{58}^{140}Ce\right) = 139.90543u$

$m\left({}_{44}^{99}Ru\right) = 98.90594u$

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