PHYSICS

BOOKS - OSWAAL PUBLICATION PHYSICS (KANNADA ENGLISH)

SOLVED PAPER 1

Exercise

1. How does the electrostatic force between two point charges change, when a dielectric

medium is introduced between them ?

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2. State Kirchoff's junction rule.

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3. What is lorentz force ?

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4. Write the relation connecting rms value and Peak value of alternating current.

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5. What is motional electromotive force ?

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6. Mention the value of power factor of a pure capacitor.

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7. Define half life of a radiocative sample.

8. Give the circuit symbol of AND-gate.

9. Write any one advantage of light emiting diode.

10. What is attenuation in communication system ?

11. State and explain Gauss's theorem in Electrostatics.

12. Define mobility. Mention its S.I. Unit

13. What is ohmic device? Give one example.

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

15. The magnetic flux linked with a coil varies as $\phi = 3t^2 + 4t + 9$. Find the magnitude of the emf induced at t = 2S.

16. Write Maxwell's equation for the speed of electromagnetic waves and explain the terms.

17. What are de-Brogli Waves ? How does the de-Broglie wavelength vary with momentum of moving particle ?

18. Draw the block diagram of generalised communication system.

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

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20. Derive the relation $\vec{j} = \sigma\vec{E}$ with terms which has usual meaning.

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21. How can a moving coil galvanometer be converted into a voltmeter? Explain with a diagram.

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22. Mention any three application of eddy currents.

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23. Write any three difference between interference and diffraction.

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24. Define the terms :

Threshold frequency

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25. Define the terms :

Work function.

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26. Define the terms :

Stopping potential.

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

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

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

30. Show that a current carrying solenoid is equivalent to a bar magnet.

31. Derive th lens maker's formula.

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32. Derive an experession for the total energy of an electron in stationary state of hydrogen atom. Assuming the expression for the radius.

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

34. In a parallel plate capacitor with air between the plates, each has an area $8 \times 10^{-3} m^2$ and distance between the plates is 2 mm. Calculate the capacitance of the capacitor. If this capacitor is connected to a 50

V supply, what is the charge on each plate of the capacitor? (Absolute permittivity of free space $= 8.85 \times 10^{-12} Fm^{-1}$)

35. Three resistor $4\Omega, 6\Omega$ and 8Ω, are combined in parallel. What is the total resistance of the combination ?

36. A sinusoidal voltage of peak value 285 V is applied to a series LCR circuit in which resistor of resistance 5 W, pure Inductor of Inductance 28.5 mH and capacitor of capacitance 800 μ R are connected.

Find the resonant frequency.

37. A sinusoidal voltage of peak value 285 V is applied to a series LCR circuit in which resistor

of resistance 5 W, pure Inductor of Inductance 28.5 mH and capacitor of capacitance 800 μ R are connected.

Calculate the impedance, current and power dissipated at the resonance.

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38. In young's double slit experiment distance between the slits is 0.5 mm. When the screen is kept at a distance of 100 cm from the slits, the distance of ninth bright fring from the

centre of the fringe system is 8.835 mm. Find the wavelength of light used.

39. Calculate the Binding energy and and binding energy per nuclcon of an oxygen nucleus $\left(O_8^{16}\right)$ using the following data (MeV):

Mass of proton = 1.007825 u

Mass of neutron = 1.00865 u

Mass of oxygen nucleus = 15.995 u.