PHYSICS

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PHYSICS (KANNADA ENGLISH)

2019 Solved Paper I

Exercise

1. State Coulomb's law .

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2. Define electrical resistivity of a material of a conductor.

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3. What is magnetic susceptibility ?

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4. How the self-inductance of a coil depends on number of turns in the coil ?

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5. For which position of the object magnification of convex lens is -1 (minus one) ?

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6. For which angle of incidence reflected ray is completely polarised ?

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7. Mention any one type of electron emission.

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8. Write the expression for energy of an electron orbit of hydrogen atom.

9. Write the relation between Half-Life and Mean-Life of radio active element.

10. Write any two basic properties of charges

11. Write the expression for drift velocity in terms of current and explain the terms.

12. Define:

(a) Magnetic declination (b)Magnetic dip. Mention the S.I. unit of magnetisation.

13. Write the expression for speed of light in terms of μ_0 and ε_0, explain the terms used.

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14. Write the ray diagram for formation of image in the simple microscope.

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15. What is diffraction of light?

16. Write the expression for de-Broglie wavelength of electrons interms of electric potential and explain the terms used.

17. Distinguish between n-type and p-type semiconductos.

18. Derive an expression for potential energy of electric - di-pole placed in a n uniform electric field .

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19. Write the expression for force per unit length between two striaght parallel current carrying conductors of infinite length . Hence defin e SI unit of current 'ampere'.

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20. Distinguish between .dia. and .ferro. magnetic materials.

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

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22. Write three experimental observation of photoelectric effect.

23. Write the three postulates of Bohr.s atomic model.

24. Explain the .Conduction band. .Valence band. and .Energy gap. in semiconductors.

25. What is modulation ? Write the block diagram of the receiver.

26. Write the expression for electric field intensity at any point outside and inside due to a charged spherical shell.

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27. Obtain an expression for equivalent resistance of two resistors connected in parallel.

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

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29. Derive an expression for the impedance of a series LCR, circuit, when an AC voltage is applied to it.

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30. Derive th lens maker's formula.

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

32. In a circular parallel plate capacitor radius of each plate is 5 cm and they are separated by a distance of 2mm. Calculate the capacitance and the energy stored. When it is charged by connectig battery of 200 V. (given $\varepsilon_0 = 8.854 \times 10^{-12} Fm^{-1}$)

33. Two resistors are connected in series with 5V battery of negligible internal resistance. A

current of 2 A flows through each resistor. If they are connected in parallel with the same battery a current of $\dfrac{25}{3} A$ flows through combination. Calculate the value of each resistance.

34. A conductor of length 3m moving in a uniform magnetic field of strength 100 T. It covers a distance of 70 m in 5 sec. Its plane of motion makes an angle of $30°$ with direction

of magnetic field. Calculate the emf induced in it.

35. In a Young.s double slit experiment wave length of light used is 5000 A and distance between the slits is 2mm, distance from slits is 1m. Find fringe width and also calculate the distance of 7th dark fringe from central birght fringe.

36. Half life of U-238 undergoing α decay is 4.5×10^9 years. What is the activity of one gram of U-238 sample ?