



KLE Society's

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MODEL QUESTION PAPER – 2

Class	: II PU	Subject	: Physics	Subject Code	: 33
Year	: 2020 – 21	Duration	: 3 hours 15 minutes	Maximum Marks	: 70

Instructions: a) All parts are compulsory.

b) Answer without relevant diagram / figure / circuit wherever necessary will not carry any marks.

c) Numerical problems solved without writing the relevant formulae carry no marks

PART-A

I. Answer ALL the following questions:

[10X1 =10]

1. Define dipole moment.
2. How does the resistivity of a semiconductor vary with temperature?
3. At what angle of motion a charged particle experience maximum force?
4. Draw the pattern of magnetic field lines around a bar magnet.
5. Give the S I unit of magnetic flux?
6. Mention any one application of microwaves.
7. State Snell's law of refraction.
8. Write an expression for de-Broglie wave length of a particle?
9. In which region of the electromagnetic spectrum do the first four lines of balmer series lie?
10. What are isobars?

PART-B

II. Answer any FIVE of the following questions:

[5X2=10]

11. State coulomb's law and give its vector form.
12. Mention any two factors on which the capacitance of a parallel plate capacitor depend.
13. What is Ohmic device? Give one example.
14. State and explain Ampere circuital law.
15. Mention the expression for magnetic force experienced by a charged particle moving in the uniform magnetic field and explain the symbols.
16. Define magnetic 'declination' & 'dip' at a place.
17. What is motional emf? Give the expression for the same.
18. State Huygen's principle.

PART-C

III. Answer any FIVE of the following questions:

[5X3=15]

19. Give three properties of electric charge.
20. Derive the relation between electric field and electric potential

21. Obtain the relation between current density and conductivity.
22. With the help of a circuit diagram, explain how can a potentiometer be used to compare emf's of two primary cells.
23. Obtain an equation for magnetic force on a current carrying conductor placed in a magnetic field.
24. Derive an expression for the instantaneous current in case of AC applied to a pure inductor
25. Distinguish between nuclear fission and fusion.
26. Write any three differences between p-type & n-type semiconductor.

PART-D

IV. Answer any TWO of the following questions:

[2X5=10]

27. Obtain an expression for equivalent capacitance of two capacitors connected in series.
28. Deduce the balancing condition for Wheatstone's network.
29. Derive an expression for impedance and current in a series L C R circuit with phasor diagram.

V. Answer any TWO of the following questions:

[2X5=10]

30. Write the experimental observations of photoelectric effect.
31. Obtain the expression for the fringe width of interference fringes in Young's double slit experiment.
32. What is rectifier? With a suitable circuit diagram, describe the action of a full wave rectifier by drawing input and output waveforms.

VI. Answer any THREE of the following questions:

[3X5=15]

33. Two point charges $3\mu\text{C}$ and $6\mu\text{C}$ are placed 20cm apart. Find the electric field at the Centre of the line joining them.
34. A circular coil of 20turns of mean radius 0.06m carries a current of 1A. Calculate the magnetic field at
 - 1) the Centre of the coil, and
 - 2) a point on the axis distant 0.08m from its Centre.
35. A long solenoid with 15 turns per cm has a small loop of area 2cm^2 placed inside the solenoid normal to its axis. If the current carried by the solenoid changes steadily from 2A to 4A in 0.1s. calculate the induced emf in the loop while the current is changing.
36. An object of height 3cm is placed 12cm in front of a concave lens of focal length 21cm. Find the position, nature and size of image formed.
37. The first member of the balmer series of hydrogen atom has wavelength of 6563\AA . Calculate the wavelength and frequency of the second member of the same series (given $c=3\times 10^8$ m/s)

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