JAIN COLLEGE

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Bangalore - 560 098

Date: ***SUBJECT: PHYSICS***

II PUC

Mock paper I

Timings Allowed: 3 Hrs15Mintues ***Total Marks: 70***

General Instructions:

- All parts are compulsory.
- Answer without relevant diagram/figure wherever necessary will not carry any marks.
- Direct answers to numerical problems without detailed solutions will not carry any marks.

PART-A

I Answer **ALL** the following questions: **10x1=10**

1. What is meant by electric flux through a surface?
2. The value of resistance of a resistor is 100kΩ ±10%. Write the color sequence of resistor.
3. What is the nature of force between two parallel conductors carrying current in same direction?
4. Define retentivity.
5. State Lenz's law.
6. How is r.m.s voltage of ac related to peak value of ac voltage?
7. Mention one method to increase resolving power a microscope.
8. What is mass defect?
9. Name the logic gate which has one input and one output.
10. What is the signal band width offered by a coaxial cable in transmission medium?

PART-B

II Answer any **FIVE** of the following questions: **5x2=10**

11. Define "linear charge density "and "surface charge density "at a point.
12. Define resistivity. A wire of resistivity ρ is stretched to 3 times of its length. What will be its new resistivity?
13. Give the properties of a ferromagnetic material used for making electro magnets.
14. Write an expression for band width in resonant AC circuit and explain the terms.
15. Give any two characteristics of electromagnetic waves.
16. Explain Malu's law for Polaroids.
17. Different colors of visible light are made to incident on metal surface. For which color is stopping potential (i) maximum (ii) minimum.
18. Draw a block diagram of AM transmitter.

PART-C

III Answer any **FIVE** of the following questions: **5x3=15**

19. Derive the expression for potential energy of a system of two charges in absence of external electric field.
20. What is Cyclotron? Draw its labeled diagram.
21. Define horizontal component of earth's magnetic field at a point .What are the value of magnetic dip at (i) pole (ii) equator.
22. State Faraday's laws of electromagnetic induction.
23. What is resonance in series LCR circuit? Derive the expression for resonant angular frequency.

24. Mention the applications of total internal reflection of light.
25. Define the terms (i) work function (ii) stopping potential (iii) threshold frequency.
26. How is Zener diode used as voltage regulator?

PART-D

IV Answer any **TWO** of the following questions: **2x5=10**

27. State Gauss's law in electrostatics. Using the law derive an expression for electric field due to uniformly charged thin spherical shell at a point outside the shell .
28. Derive the expression for equivalent e.m.f and equivalent internal resistance when two different cells are connected in series.
29. Derive the expression for magnetic field at a point on the axis of a circular current loop.

V Answer any **TWO** of the following questions: **2x5=10**

30. Obtain the expression for fringe width in case of interference of light waves.
31. State three postulates of Bohr .Mention two limitations of Bohr's model.
32. What is a transistor? Explain the basic action of n–p-n transistor.

PART-E

VI Answer any **THREE** of the following questions: 3**x5=15**

33. A point charge of 25μc is situated at a point O. A and B are points 0 .05m and 0 .15m away from this charge. Calculate the amount of work done to move an electron from B to A.
34. Three resistor 2Ω, 4Ω,5Ω are connected in parallel . Calculate the total resistance of combination. If combination is connected to a battery of e.m.f 20V and negligible internal resistance. Calculate current through each resistor and total current drawn from battery.
35. A 80Ω resistor and 20μF capacitor are connected in series with an AC source of 220 V-50Hz. Calculate potential difference across each of them.
36. A prism of angle 60^0 produces angle of minimum deviation of 40^0. What is its R.I? Calculate angle of incidence.
37. Calculate the change in stopping potential for a photoelectron emitted from surface if the wavelength of incident radiation reduced from 5900 A^0 to 5000 A^0

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