

## MODEL QUESTION PAPER

### PHYSICS XII

#### 1 mark Questions(1-7, write any 5)

1. A small resistance is connected in .....(series/ parallel) to convert a galvanometer to ammeter? (1 mark)
2. Write down the expression for displacement current?(1 mark)
3. Write the unit of Inductance? (1 mark)
4. Which of the following phenomena illustrates the transverse nature of light? (Reflection, Refraction, Scattering, polarization)
5. Work done to move a charge in an equipotential surface is.....
6. If three capacitors of capacitance  $C_1$ ,  $C_2$  and  $C_3$  are connected in series, Write the Effective capacitance of the combination?
7. SI unit of Electric field  
(a) Coulomb (b )  $NC^{-1}$  (c) NC (d)Volt

#### 2 mark Questions (8-14, write any 5)

8. A 12pF capacitor is connected to a 50V battery. How much Electrostatic energy is stored in the Capacitor?
9. (a) Define Power of a lens?  
(b) Find the power of a convex lens of focal length 10 cm?
10. Explain briefly about energy losses in a transformer?
11. Match the following

A	B
X-ray	Water purifier
Infra red	Cancer treatment
Micro wave	Remote switch
UV	Radar

12. State Gauss's law in Magnetism?
13. (a) State Ohm's law?  
(b) Which of the material has highest resistance?
14. Using Ampere's Circuital law obtain the expression for Magnetic field due to a straight infinite current carrying wire?

**3 Mark Questions(15-21, write any 6)**

15. (a) Write Kirchhoff's Loop Rule?  
(b) With the help of a diagram obtain Whetstone's bridge Principle? (3 mark)
16. What is a full wave rectifier? Draw the input and output voltage waveforms in a full wave rectifier?
17. Draw energy level diagram of hydrogen atom and label different series of lines observed in Hydrogen spectrum?
18. (a) Write the expression for Radius of a Nucleus? ( 1 mark)  
(b) Two nuclei having mass numbers in the ratio 1:64 . What is the ratio of their nuclear radii? (2 mark)
19. (a) What is total Internal Reflection? (1 mark)  
(b) What are the conditions for Total Internal Reflection? (2 mark)
20. (a) write any two properties of electric field lines(1)  
(b) Draw Electric field lines due to an electric dipole (1)  
(c) Write Expression for Torque acting on a dipole placed in a uniform Electric field(1)

**4 Mark Questions(22-25, Write any 3)**

22. (a) Define Photo electric effect?(2 mark)  
(b) Write Einstein's Photo Electric Equation?(2 mark)
23. (a) What is Motional emf? (1 mark)  
(b) Derive an expression for Motional emf? (3 mark)
24. (a) State Huygens's Principle?( 1mark)  
(b) Using this theory derive Snell's law of Refraction? (3 mark)
25. (a) Derive an expression for Electric potential at a point, due to an Electric Dipole (3)  
(b) "Person sitting inside a car is safe from lightning" Justify this statement (1)

### 5 Mark Questions(26-29, Write any 3)

26. Guass' Law relates between Electric flux over the surface and Charge enclosed
- (a) State Guass's Law? (1 mark)
  - (b) Using Guass' law, derive an expression for Electric field at a point, due to infinitely long straight charged wire? (3 mark)
  - (c) A charge of  $10\mu\text{C}$  is given to a hollow sphere, then what will be the electric field inside the sphere? (1 mark)
27. (a) Draw the Phasor diagram of LCR Series circuit ? ( 2 mark)
- (b) Obtain the expression for Current, when an ac voltage applied to a series LCR circuit using Phasor diagram? (3mark)
28. (a) State Biot Savart's law? (1 mark)
- (b) Using this law obtain expression for magnetic field along the axis of a circular current loop? (3 mark)
- (c) Obtain the magnetic field at the centre of this loop? (1 mark)
29. (a) Draw a neat diagram of refraction of light through a Prism? (2 mark)
- (b) Obtain an expression for refractive index of the material of the Prism? (3 mark)

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