PHYSICS

BOOKS - VGS PUBLICATION-BRILLIANT

MODEL PAPER - 13

Section A

1. Define focal length and radius of curvature of a concave lens.

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2. A circular coil of radius 'r' having N turns carries a current "i". What is its magnetic moment?

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3. Magnetic lines form continuous closed loops. Why?'

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4. What is paramagnetism ?

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5. Write the expression for the reactance of an inductor and

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6. Write the expression for the reactance of a capacitor.

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7. Give two uses of infrared rays.

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8. Write down Einstein's photoelectric equation.

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9. Find the minimum wavelength of X-rays produced by 30 kV electrons.

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10. What is p-n junction diode ? Define depletion layer.

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11. What is sky wave propagation ?

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Section B

1. With a neat labelled diagram explain the formation of image in a simple microscope.

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2. Explain Doppler effect in light. Distinguish between red shift and blue shift.

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3. Derive an expression for the intensity of the electric field at a point on the equatorial plane of an electric dipole.

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4. Derive an expression for the potential energy of an electric dipole placed in a uniform electric field.

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5. What are the basic components of a cyclotron? Mention its uses.

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6. Obtain an expression for the emf induced across a conductor which is moved in a uniform magnetic field which is perpendicular to the plane of motion.

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7. Describe Rutherford atom model. What are the drawbacks of this model ?

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8. What is rectification ? Explain the working of a full wave rectifier.

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Section C

1. What is Doppler shift ? Obtain an expression for the apparent frequency of sound heard when the observer is in motion with respect to a source at rest.

Two trucks heading in opposite directions with speeds of 60 kmph and 70 kmph respectively, approach each other. The driver of the first truck sounds his horn of frequency 400 Hz. What ' frequency does the driver of the second truck hear ? (Velocity of sound'= 330 m/s).

After the two trucks have passed each other, what frequency does of the second truck hear?

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2. State Kirchhoff's law for an electrical network. Using these laws deduce the condition for balance in a Wheatstone bridge. You are given 8Ω resistor, What length of wire of resistivity $120\Omega m$ should be joined in parallel with it to get a value of 6Ω?

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3. Define mass defect and binding energy. How does binding energy per nucleon vary with mass number ? What is its - significance ?

Show that the density of a nucleus does not depend upon its mass number (density is independent of mass).

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