



PHYSICS

BOOKS - VGS PUBLICATION-BRILLIANT

MODEL PAPER 12

Section A

1. What is hypermetropia ? How can it be corrected ?



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2. What is the importance of Oersted's experiment?



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3. Define, magnetic inclination or angle of dip.



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4. What is the torque acting on a plane coil of "n" turns carrying a current "i" and having an area A, when placed in a constant magnetic field B?



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5. What type of transformer is used in a 6V bed lamp ?



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6. What is "photoelectric effect"?



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7. Microwaves are used in Radars, why?



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8. Find the maximum frequency of electrons produced by X-rays of 30 kV electrons.



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9. What is the maximum percentage of rectification in half wave and full wave rectifiers?



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10. What is "World Wide Web" (WWW)?



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1. Explain the Cartesian sign convention for mirrors.



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2. What is total internal reflection? Explain the phenomenon using Huygens principle.



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3. Derive the equation for the couple acting on an electric dipole in a uniform electric field.



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4. Derive an expression for the electric potential due to a point charge.



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5. State and explain Biot - Savart law.



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6. Describe the ways in which Eddy currents are used to advantage.



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7. What are the limitations of Bohr's theory of hydrogen atom?



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8. Discuss the behaviour of p-n junction. How does a potential barrier develop at the junction ?



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Section C

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

A train sounds its whistle as it approaches and crosses a level crossing. An observer at the crossing measures a frequency of 219 Hz as the train approaches and a frequency of 184 Hz as it leaves. If the speed of sound is taken to be 340 m/s, find the speed of the train and the frequency of its whistle.



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2. Draw a circuit diagram showing how a potentiometer may be used to find internal

resistance of a cell and establish a formula for it. A potentiometer wire is 5 m long and a potential difference of 6V is maintained between its ends. Find the emf of a cell which balances against a length of 180 cm of the potentiometer wire.



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3. Explain the principle and working of a nuclear reactor with the help of a labelled diagram. Calculate the energy released by

fission from 2g of ${}_{92}^{235}\text{U}$ in kWh. Given that the energy released per fission is 200 MeV.



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