

July 2014

Bachelor of Computer Application (BCA) Examination
II Semester**Physics-II**

Time : 3 Hours]

[Max. Marks : 40

Note : Attempt all the five questions. Solve any two parts from each question. All questions carry equal marks.

1. (a) What do you mean by Electromagnetic Waves ? How these waves are produced ? Write down the radiation names of shortest wavelength and the largest wavelength of electromagnetic spectrum.
(b) What do you mean by Skip Distance and Critical Frequency ? Write down the factors on which skip distance depends.
(c) Write down the Maxwell's Equation. Establish the equation for electromagnetic wave using Maxwell's equation.
2. (a) What do you understand by Superposition of Waves ? Give principle of superposition.
(b) What do you mean by Thin Films ? Discuss the interference of light in a thin parallel film with proper theory.
(c) Explain the construction and working of the Michelson's interferometer with neat and labelled diagram.
3. (a) Differentiate between Fresnel's and Fraunhofer's Diffraction.
(b) Explain rectilinear propagation of light with neat and suitable diagram.
(c) What do you mean by resolving power of a plane transmission grating? Obtain an expression for it.
4. (a) On the basis of Huygen's principle explain the phenomenon of double refraction in uniaxial crystal.
(b) Explain Nicol prism with neat and labelled diagram.
(c) In a calcite crystal, ordinary and extraordinary waves travel a distance of 0.02 mm normal to its optic axis. Calculate the phase difference (ϕ) between the two waves on emergence from the crystal, if $\lambda = 6000 \text{ \AA}$ and $\mu_o = 1.658$ and $\mu_e = 1.486$. Also calculate the speed of the two waves within the crystal.
5. (a) Explain Doppler's effect of light ? Give its applications also.
(b) Explain spontaneous and stimulated emission and also explain population inversion.
(c) Discuss different types of LASER

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