

September 2012

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) Write the Maxwell's equations for Electromagnetic Field and their physical significances.
(b) Explain the Transmission Line and its uses.
(c) Find the velocity of a plane wave in a lossless medium having a relative permittivity of 5 and relative permeability of 1.
2. (a) What is meant by Interference of Light ? State the fundamental conditions for the production of interference fringes.
(b) In Newton ring's experiment prove that the diameter of the m th dark ring is proportional to under root of wavelength.
(c) Describe the formation of fringes in Michelson interferometer and one application of it.
3. (a) Discuss the Fraunhofer Diffraction of light by a single narrow slit.
(b) What is Dispersive Power of Grating ?
(c) The diameter of the first ring of a Zone Plate is 1.1 mm. If plane waves ($\lambda = 6000\text{\AA}$) fall on the plate, where should the screen be placed so that light is focused to a bright spot ?
4. (a) Distinguish between Polarised and Unpolarised Light.
(b) Describe the construction of a Nicol Prism and show it can be used as a polarizer and analyzer.
(c) Explain the working and use of quarter wave plate.
5. (a) Explain Doppler Effect for light waves.
(b) Prove the relation between the Coefficient of Spontaneous Emission and Coefficient of Stimulated Emission.
(c) Describe the principle / construction and working of Ruby Laser.

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