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Total No. of Pages : 02

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B.Sc.(Computer Science) (2013 & Onwards) (Sem.-3)**OPTICS****Subject Code : BCS-303****M.Code : 71775****Time : 3 Hrs.****Max. Marks : 60****INSTRUCTION TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **SIX** questions carrying **TEN** marks each and a student has to attempt any **FOUR** questions.

SECTION-A**1. Answer briefly :**

- a) Explain the phenomenon of interference.
- b) Two coherent sources of intensity ratio 100:1 interfere. Deduce the ratio of intensity between maxima and minima.
- c) What is the relation between phase difference and path difference?
- d) Why are colours not observed in reflected light with white light in the case of thick films?
- e) Explain why an excessively thin film appears black in reflected light.
- f) How many types are of diffraction?
- g) How is zone plate constructed?
- h) *"If we look at the sun through a piece of fine cloth we observe coloured spectra at the site of holes in the cloth."* Why?
- i) Explain Rayleigh's criterion of resolution.
- j) State and explain Malus law.

SECTION-B

2. Describe Fresnel's biprism. Describe in detail how the wavelength of monochromatic source of light can be determined with its help.
3. Discuss the phenomenon of interference in thin films. Obtain the condition for maxima and minima. Show that the interference patterns in the reflected and transmitted system are complimentary.
4. Describe the principle, construction and working of Michelson's interferometer. What is the purpose of compensating plate?
5. Discuss the Fraunhofer diffraction produced by a circular aperture. What is its importance?
6. What is meant by the resolving power of a microscope? How is it related to the numerical aperture of its objective?
7. What do you understand by double refraction? What are ordinary and extra-ordinary rays and how will you show that these are plane polarized?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.