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Paper Code: TPH 101

Mid Semester Examination, 2018

Course Name: B.Tech 1st Sem

Paper Name: Engineering Physics

Time: 1.30 Hours

MM: 50

Note:

- (i) This question paper contains two sections.
- (ii) Both sections are compulsory.

Section - A

Q1. Fill in the blanks

(1x5=5 Marks)

- (a) If Freshnel's biprism experiment setup is immersed in transparent liquid, the fringe width is.....
- (b) The grating element is.....
- (c) The phenomenon due to which oily layer on water surface seen coloured is.....
- (d) The specific rotation of sugar solution is.....
- (e) The formula of wavelength of monochromatic light is

Q2. Attempt any five

(3 x 5= 15 Marks)

- (a) What are Fraunhofer and Freshnel diffraction.
- (b) Write the conditions for good interference.
- (c) What is Rayleigh Criterion of resolution.
- (d) Explain spontaneous and stimulated emission of radiation.
- (e) Draw two ray diagrams for the production of coherent sources.
- (f) What is dispersive power of diffraction grating.

Section - B

Each question contains three parts a, b & c. Attempt any two parts of choice from each question.

Q3.

(5 x 2 = 10 marks)

- (a) Show that the diameter of bright rings are directly proportional to square root of odd natural numbers in newton's ring experiment.
- (b) Two coherent sources of monochromatic light of wavelength 600 nm produce an interference pattern on a screen kept at a distance of 1 m from them. The distance between two consecutive bright fringes on the screen is 0.5 mm. Find the distance between the two coherent sources.
- (c) Derive the resultant intensity of Fraunhofer diffraction due to single slit.

Q4.

(5 x 2 = 10 marks)

- (a) Find the condition of principal maxima in diffraction grating.
- (b) What is the highest order spectrum which may be seen with light of wavelength 589 nm by means of a grating with 10000 lines per 2 cm..
- (c) Explain construction and working of half shade polarimeter.

Q5.

(5 x 2 = 10 marks)

- (a) Find path difference between two rays in interference in thin film.
- (b) A 5% solution of cane sugar placed in tube of length 40 cm, causes the optical rotation of 20°. How much length of 10% solution of the same substance will cause 35° rotation?.
- (c) Write working of ruby laser with suitable diagram.