

RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY (AUTONOMOUS),

KOCHI

FIRST SEMESTER B. TECH EXAMINATION

MODEL QUESTION PAPER

Course Code: 101908/PH922S

Course Name: ENGINEERING PHYSICS LAB (A & B)

Max marks: 30

Duration: 1 Hour

PART A

Answer all questions. Each question carries 1 mark

1. An air-wedge interference fringes are due to interference of the light reflected from
1 mark
 - a. Upper surface of the top glass plate and lower surface of bottom glass plate
 - b. Lower surface of top glass plate and upper surface of the bottom glass plate
 - c. Lower and upper surface of top glass plate
 - d. Lower and upper surfaces of bottom glass plate
2. What is difference between photodiode and solar cell? 1 mark
 - a. Photodiode requires reverse biasing but solar cell does not require external biasing
 - b. Photodiode requires forward biasing but solar cell does not require external biasing
 - c. Both does not require forward biasing
 - d. Solar cell requires forward biasing but photodiode does not require forward
3. A beam of white light is passed through a diffraction grating and the resulting spectrum is allowed to fall on a screen. Which of the following colors of light will undergo the largest deviation? 1 mark
 - a. Red
 - b. Yellow
 - c. Blue
 - d. Violet
4. Why we use a plano-convex lens of large radius of curvature placed on a plane glass plate in Newton's ring experiment? 1 mark
 - a. To make air-film non-uniformly thin
 - b. To make air-film non-uniformly thick
 - c. To make air-film uniformly thin
 - d. To make air-film uniformly thick
5. The fundamental frequency of wave in a stretched string is: 1 mark

- a. Inversely proportional to square root of linear density of the string
- b. Directly proportional to the length of the string
- c. Inversely proportional to square root of length of the string
- d. Directly proportional to square root of linear density of the string

PART B

Answer all questions. Each question carries 2 marks

6. Calculate the numerical aperture of an optical fiber whose core and cladding are made of materials of refractive index 1.6 and 1.5 respectively. 2 marks
- a. 0.55677
 - b. 0.2336
 - c. 0.1458
 - d. 0.333
7. In plane transmission grating, the angle of diffraction for second order maxima for wavelength 5×10^{-5} cm is 30 degree. Estimate the number of lines in one centimeter of the grating surface. 2 marks
- a. 1000 lines/cm
 - b. 5000 lines/cm
 - c. 500 lines/cm
 - d. 10000 lines/cm
8. In Newton's ring experiment, the inner diameter of the 5th ring was found to be 0.336 cm and that of the 15th ring was at 0.590cm. If the radius of plano-convex lens is 100 cm, what is the wavelength of light used? 2 marks
- a. 5885 Angstrom
 - b. 5850 Angstrom
 - c. 5880 Angstrom
 - d. 5890 Angstrom
9. A 1 cm^2 solar cell is illuminated with sunlight yielding a short circuit photocurrent of 25 mA and an open circuit voltage of 0.62V. The voltage corresponding to the maximum power point is 0.54V and the corresponding current is 0.024A. Estimate the solar cell fill factor. 2 marks

- a. 0.99
- b. 0.83
- c. 0.75
- d. 0.85

9. The displacement y of a wave travelling in the x direction is given by $y = 0.0001 \sin(600t - 2x + \pi/3)$ where x is expressed in meters and t is seconds. The speed of the wave motion (in m/s) is 2

marks

- a. 300
- b. 600
- c. 200
- d. 400