R16

Code No: 131AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year I Semester Examinations, June - 2022
ENGINEERING PHYSICS
(Common to CE, ME, AE, PTM, MSNT)

Time: 3 Hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Describe and explain the phenomenon of interference of light.
  b) In a Newton's rings experiment the diameter of 15 th ring was found to be 0.59 cm and that of the 5 th ring is 0.336 cm. If the radius of curvature of the lens is 100 cm, find the wavelength of the light.   [9+6]

2.a) Explain with theory the Fraunhofer diffraction at a single slit.
  b) Find the resolving power of a grating having 6000 lines/cm in the first order diffraction. The rolled length of the grating is 15 cm.   [9+6]

3.a) Explain the phenomenon of double refraction.
  b) Write the working of quarter wave plate and half wave plate.   [8+7]

4.a) Write the characteristics of laser. Explain stimulated emission and spontaneous emission.
  b) Describe the principle, construction and working of semiconductor laser.   [8+7]

5.a) Write the principle and construction of optical fibre.
  b) Write the medical applications of optical fibres.   [8+7]

6.a) Discuss light propagation in step index optical fibre and graded index fibre.
  b) Write the sensor applications of optical fibres.   [8+7]

7.a) Obtain the expression for packing factor for simple cubic and body centered cubic.
  b) What are miller indices and write the indexing of planes in crystals.   [8+7]

8.a) With neat diagram, write the crystal structure determination by Laue method.
  b) Write a note on surface defects.   [8+7]

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