Code No: 131AC

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year I Semester Examinations, October/November - 2020
ENGINEERING PHYSICS
(Common to CE, ME, MCT, MMT, AE, MIE, PTM, MSNT)

Time: 2 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Explain the formation of Newton's rings.
  b) Derive the expression for radius of curvature in the Newton's rings experiment.   [7+8]

2.   Explain with theory the Fraunhofer diffraction at a single slit.   [15]

3.a) Explain spontaneous and stimulated emissions.
  b) Write in detail the pumping mechanism.
  c) Discuss population inversion.   [5+5+5]

4.a) Explain the construction and working of semiconductor laser with diagram.
  b) Write the applications of lasers.   [7+8]

5.a) Write the important features of optical fibre.
  b) Derive an expression for acceptance angle for an optical fibre. How it is related to numerical aperture.   [7+8]

6.a) Write the classification of optical fibres.
  b) Discuss the applications of optical fibres in medicine.   [7+8]

7.a) Obtain packing factor for simple cubic and BCC.
  b) Describe FCC crystal structure.   [7+8]

8.a) Distinguish between Schottky and Frenkel defects .
  b) What is Burger's vector and write its importance.
  c) Write about stacking faults, twin tilt and grain boundaries.   [5+5+5]

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