Code No: 152AM **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year II Semester Examinations, June - 2022
APPLIED PHYSICS
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) What is Photoelectric effect? Derive an expression for the work function (wherever necessary draw figures neatly).
b) Derive Schrodinger's time independent wave equation. [8+7]

2.a) What is semiconductor and how many types are there? Explain briefly.
b) With necessary diagrams, discuss the characteristics of Zener Diode. [8+7]

3.a) Briefly discuss Radiative and non-radiative recombination mechanisms in semi conductors.
b) Draw the structure of PIN detector and explain its working principle. [8+7]

4.a) Explain the principle and working of LASER.
b) Define Acceptance angle and Numerical Aperture. Find the relation between them. [8+7]

5.a) Derive Maxwell equations in Vacuum.
b) Classify Magnetic Materials and explain briefly ferromagnetic domain. [7+8]

6.a) What is De-Brogle's hypothesis. Obtain De-Brogle's wavelength.
b) What is Hall Effect and obtain an expression for Hall coefficient. [7+8]

7.a) Draw the structure of LED and explain in detail.
b) Find Numerical Aperture and Acceptance angle of an optical fiber from the given data: n_1(core) = 1.50 and n_2 (Clad) = 1.45. [9+6]

8.a) Derive Clausius-Mossotti equation and explain its significance.
b) Explain the construction and operation of BJT. [8+7]

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