Code No: 152AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year II Semester Examinations, November/December - 2020
APPLIED PHYSICS
(Common to CSE, IT, ITE)

Time: 2 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks

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1.a) What is Compton effect? Explain in detail.
 b) Calculate the velocity and kinetic energy of an electron having wavelength of 0.21 nm. [9+6]

2.a) Discuss Born's interpretation of the wave function.
 b) Derive the expression for de-Broglie's wavelength. [7+8]

3.a) Discuss n-type semiconductors fermi level variation with respect to carrier concentration and temperature.
 b) Derive an expression for carrier generation and recombination. [8+7]

4.a) What is Hall effect? Derive an expression of Hall Coefficient.
 b) Distinguish between n- type and p-type semiconductors. [9+6]

5.a) Write a note on Avalanche photodiode.
 b) What is a radiative and non- radiative recombination mechanism in semiconductors? [9+6]

6.a) Describe in detail with a neat diagram LED construction and working principle.
 b) What are the characteristics of Solar cell? [9+6]

7.a) With necessary theory and energy level diagram explain the working of He-Ne gas laser.
 b) Write a note on Losses associated with optical fibers. [9+6]

8.a) Obtain an expression for the internal field seen by an atom in an infinite array of atoms subjected to an external field.
 b) Write a note on ferromagnetic domains. [9+6]

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