JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech I Year Examinations, June - 2014
ENGINEERING PHYSICS
(Common to all Branches)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

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1.a) Discuss about M-B, B-E, F-D statistics.
  b) Estimate Fermi energy of a semiconductor using F-D statistics.
  c) Calculate the de Broglie wavelength of an electron moving with a velocity of 10^7 m/s.

2.a) Define unit cell, space lattice, lattice parameters.
  b) Discuss about seven crystal systems and their corresponding Bravais lattice.

3.a) Explain formation of p-n junction, energy band diagram and I-V characteristics of p-n junction.
  b) Discuss about the principle and working of LED, LCD.

4.a) Discuss about Hall effect and derive an expression for Hall voltage.
  b) Write short notes on direct and indirect band gap semiconductors with examples.

5.a) Discuss about Bohr magneton.
  b) Explain hysteresis behavior with the help of domain theory of ferromagnetism.

6.a) What are the characteristics of a laser beam?
  b) Discuss about construction and working of carbon dioxide laser.
  c) Write applications of laser.

7.a) Explain principle, construction and working of an optical fiber.
  b) Discuss about the losses in optical fibers.

8. Write short notes on the following:
    a) Laue method of X-ray diffraction
    b) Chemical vapor deposition.

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