

Khaja Bandanawaz University
Faculty of Engg and Technology
Model question paper
Subject – Engineering Physics.
Max marks:100

Section-A

- I. Answer any TEN of the following. **(2marks each)**
1. Define stimulated emission of radiation.
 2. Define Numerical aperture of an optical fiber.
 3. Define the terms pumping and active system.
 4. What is Hall effect.
 5. What are carbon nanotubes.
 6. Define Fermi energy.
 7. State Hooke's law.
 8. Define Young modulus.
 9. Define Rigidity modulus.
 10. Define attenuation.
 11. What are sensors.
 12. Define system.
 13. Define single cantilever beam.
 14. Define allotropy.
 15. Define space lattice.

Section-B

- (8marks each)**
- II. Answer any Five full questions from the following.
1. a. Derive an expression for Numerical aperture of an optical fibre.
b. Explain the properties of CNT's.
 2. Define attenuation. Explain the factors responsible for fiber loss.
 3. a. Derive an expression for Fermi level in an intrinsic semiconductor.

- b.Explain the ball-milling method for synthesis of nano materials.
4. What is Hall effect?Derive an expression for Hall voltage and Hall coefficient.
 5. a.Derive the relationship between χ , n K.
b.Explain Point-to-point communication system.
 6. Obtain an expression for energy density from Einstein's coefficient.
 7. Obtain an expression for the interplanar distance in a cubic crystal in terms of Miller indices.
 8. Derive Gibbs and Helmholtz functions.

Section-C

(10marks each)

- III. Answer any Four full questions from the following.
1. Explain the construction and working of semiconductor diode laser with energy level diagram.
 2. Explain different types of optical fibres with its refractive index profile.
 3. Define systems, types of systems and types of thermodynamic process.
 4. Define coordination number and packing factor.
Calculate the packing factor for BCC and FCC structure.
 5. Derive an expression for Young's modulus from single cantilever beam.
 6. Explain the construction and working of SEM.
 7. What are sensors. Explain radiation and thermal sensors with neat diagram.