Part B

1. Mention the advantages and disadvantages of fibre optic communications.

2. Differentiate between step index and Graded index fibres.

3. Explain how attenuated and distorted signals are recovered in the transmission link.

4. Refractive index of the core is higher than the cladding. Justify the statement.

5. Differentiate between Single and Multi-mode fiber.

6. Using Snell's law define the relationship at interface between two different media.

7. Mention the advantages of optical fiber over conventional copper systems.

8. A step-index silica fiber with a core radius much longer than the operating wavelength of light has a core refractive index of 1.50 and a cladding refractive index of 1.48. Calculate the acceptance angle in water having a refractive index of 1.33.

Part C

1. i)Derive the expression for Acceptance angle and Numerical Aperture
   ii) A boy is in a pool and shines a flashlight toward the level of it at a 350 angle to the vertical. Compute the angle does the flashlight beam leave the pool.
2. i) Describe the methods adopted for the installation of fibre cables. Comment on the precautions to be taken during the installation.
   ii) An unknown glass has an index of refraction of n=1.5n=1.5. For a beam of light originating in the glass, at what angle is the light 100% reflected back into the glass? (The refractive index of air is nair=1.00).

3. Infer in detail about various elements of optical fiber transmission link with necessary diagrams.

4. Elaborate about ray optics and types of rays with necessary representation.