**Part B**

| 1. Mention the advantages and disadvantages of fibre optic communications. |
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| 2. Differentiate between step index and Graded index fibres. |
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| 3. Explain how attenuated and distorted signals are recovered in the transmission link. | |
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| 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. |
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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). |
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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.