



- c) equal to  
 d) not related with
- (ix) Optical fiber communication operates in the wavelength band  
 a) 400  $\mu\text{m}$  to 700  $\mu\text{m}$   
 b) 800  $\mu\text{m}$  to 1600  $\mu\text{m}$   
 c) 400 nm to 700 nm  
 d) 800 nm to 1600 nm
- (x) Which rays exhibit the variation in the light acceptability ability of the fiber?  
 a) Meridional  
 b) Skew  
 c) Leaky  
 d) All of these
- (xi) In optical fiber, the outer layer is \_\_\_\_\_ and inner layer is \_\_\_\_\_  
 a) core, cladding  
 b) cladding, core  
 c) reflect, transmit  
 d) transmit, reflect
- (xii) Single mode optical fiber is mainly used for  
 a) Long haul communication  
 b) Short haul communication  
 c) Medium haul communication  
 d) None of these
- (xiii) The most important property of LASER light is  
 a) It is a coherent source  
 b) It is a non-coherent source  
 c) Its beam width is large  
 d) Its speed is very high
- (xiv) An LED source produces light when  
 a) It is reverse biased  
 b) Holes and electrons are combined in the depletion region  
 c) The depletion region becomes wider  
 d) Electrons are emitted from junction surface

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain NEP (Noise Equivalent Power) of optical detector. (3)
3. Explain how DWDM technique facilitates the optical network (3)
4. Compare the merits and demerits of fiber optic communication system. (3)
5. Explain step index and graded index fiber mentioning their refractive index profile. (3)
6. Prepare a comparative study between stimulated emission and spontaneous emission (3)

OR

Prepare a comparative study between PIN diode and APD (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. Discuss on photonic crystal fiber. (5)
8. A step index fiber has a core with refractive index of 1.55 and a cladding with a refractive index of 1.51. Evaluate the acceptance angle and numerical aperture of the fiber. (5)
9. Identify different losses associated with optical fiber. (5)
10. Explain the amplification mechanism of an EDFA. (5)
11. A multimode step index fiber with a core diameter of 80  $\mu\text{m}$  and a relative index difference of 1.5% is operating at a wavelength of 0.85  $\mu\text{m}$ . If the core refractive index is 1.48, estimate the normalized frequency and the number of guided modes. (5)
12. Explain the primary characteristics of light detectors. (5)

**OR**

Write the advantages and drawbacks of laser in comparison with LED for use as a source in (5) optical fiber communication.

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