

FIBRE OPTICS

1. What do you mean by splicer and connector? Give one example of each. (2) {JUN 15 [GNE]}
2. Why single mode fiber is preferred for long distance communication? (2) {JUN 15 [GNE]}
3. Define and derive expression for numerical aperture. Hence explain why numerical aperture is small for a graded index fiber in comparison to an identical step index fiber. (4) {JUN 15 [GNE]}
4. Write names of various losses taking place in the optical fiber. If the length of optical fiber is 2km and output power is 1/100 of input power, then find fiber loss and attenuation coefficient. (4) {JUN 15 [GNE]}
5. Why do we prefer small numerical aperture for long distance communication? (2) {DEC 14 [GNE]}
6. Differentiate single mode and multimode fiber. (2) {DEC 14 [GNE]}
7. Define acceptance angle and numerical aperture and hence derive mathematical relation between the two. (4) {JUN 14 [GNE]}
8. The core of a glass fiber has refractive index 1.5, while its cladding is doped to give a fractional change in refractive index equal to 0.005. Find (i) refractive index of clad (ii) critical internal reflecting angle (iii) acceptance angle and (iv) numerical aperture. (4) {JUN 14 [GNE]}
9. Why data carrying capacity of optical fiber is more than that of radio waves? (2) {JUN 14 [GNE]}

10. Find the numerical aperture of an optical fiber, whose core and clad have refractive index respectively 1.46 & 1.45. (2) {Dec 2013 [GNE]}
11. Define acceptance angle and derive mathematical relation for it. (4) {Dec 2013 [GNE]}
12. Find the core radius necessary for SMF for propagation of wavelength of 850nm and core and clad refractive index respectively as 1.50 & 1.49. (4)
13. Specify an application where Laser and optical fiber are used together. (2) {Jun 2013 [GNE]}
14. What do you mean by acceptance cone for an optical fiber? (2) {Jun 2013 [GNE]}
15. A step index fiber with refractive index of 1.458 and numerical aperture of 0.3 is to be used at 820nm. Find the core radius if the normalized frequency is 75. (3) {Jun 2013 [GNE]}
16. What are splicers and couplers? (2) {Dec 2012 [GNE]}
17. What is the principle of optical fibre? Discuss various applications of optical fibres. (4) {Dec 2012 [GNE]}
18. Calculate the numerical aperture and acceptance of an optical fibre with $n_1 = 1.50$ & $n_2 = 1.45$. (4) {Dec 2012 [GNE]}