

## Unit-2

13. Write the expression for the effective number of modes guided by a curved multimode fiber of radius 'a'
14. Define normalized propagation constant
15. Give expression for the effective number of modes guided by a curved multimode fiber
16. What are the causes of absorption
17. Find the coupling loss for two fibers having core refractive index profiles  $\alpha$  and  $R$   
 $\alpha = 2.0$  and  $R = 1.5$ .
18. What causes mode coupling
19. Mention the two causes of intra-modal dispersion.
20. Define fiber loss.
21. (i) Briefly explain the evolution of fiber optic system  
(ii) Compare the configuration of different types of fibers .  
or
22. (b)(i) Derive modal equation
23. (ii) Discuss the modes in step- index fibers
24. (a) (i) What is meant by material dispersion?  
(ii) Derive an expression for material dispersion  
(iii) Derive the expression for wave guide dispersion  
OR
- (b) Discuss the pulse broadening in graded index fibers
25. (i) List the advantages of optical fiber communication  
(ii) Draw the elements of an optical fiber transmission link and explain
26. OR
27. (i) Discuss the mode theory of circular waveguide
28. (a) Discuss various kinds of losses that an optical signal might suffer while propagating through fiber, Which is most important one? What is the effect of these losses on light power and pulse shape?  
(b) What is mode coupling? Discuss pulse broadening in GI fibers.