

Code: RA 9A04702

RA

B.Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

OPTICAL COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) What are the advantages and disadvantages of optical fiber communication?
(b) Draw the optical fiber communication block diagram and explain each in detail.
(c) Discuss the analog and digital applications of optical fiber.
- 2 (a) With neat diagram explain the light propagation conditions in single mode fibers.
(b) What is micro bending? Explain with diagram how the micro bending is minimized and avoided by a compressible jacket.
- 3 (a) Explain about material and wave guide dispersions.
(b) Explain the modulation capability of the laser diode, its temperature affects and how to compensate for variations in temperature.
- 4 (a) Explain about fiber splicing techniques.
(b) Estimate the losses encountered while coupling power from a source to a fiber due to mismatch in their numerical apertures and surface areas.
- 5 (a) Explain in detail LED with neat diagram.
(b) Reason out if the two parameters 'quantum efficiency and responsivity signify the same properties of a LED.
- 6 (a) Explain the fundamental principle of PIN diode detector with neat diagrams.
(b) Derive an expression for total mean square noise signal in a photo detector and hence the S/N ratio at the output of a receiver.
- 7 (a) Describe a method to carry out rise time budget analysis for a fiber optic link.
(b) Explain system rise time calculations with an example.
- 8 (a) Explain operational principle and key features of WDM.
(b) Explain the eye pattern analysis for assessing the performance of a digital fiber optic link, from this eye pattern is it possible to find BER.
