

Code: 9A04702

R09

B.Tech IV Year I Semester (R09) Regular & Supplementary Examinations December 2014

OPTICAL COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Draw the block diagram of a fiber optic communication system.
(b) Explain about cylindrical fibers with neat diagrams.
- 2 (a) Explain in detail about single mode fibers with diagrams.
(b) Explain about graded index fibers with diagrams.
- 3 (a) How do you find whether an optical fiber link is limited by attenuation or by dispersion? Explain clearly.
(b) Derive an expression for pulse spreading in a step index multi mode fiber due to intermodal dispersion.
- 4 (a) Illustrate various types of misalignments resulting in losses while splicing and joining optical fibers.
(b) Write about optical circulators.
- 5 (a) Establish the threshold gain condition for lasing to occur in a fabry-perot resonator based laser diode.
(b) Write short notes on external quantum efficiency.
- 6 (a) Compare different photo detectors.
(b) Derive the expressions for photo detector noise and detector response time.
- 7 (a) With a neat block diagram, explain the process of digital signal transmission.
b) (Write short notes on line coding in optical links.
- 8 (a) Explain in detail diffraction gratings.
(b) What are tunable light sources? Explain them.
