Seat No.: Enrolment No
------------------------

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER - VI (OLD). EXAMINATION - WINTER 2016

Subject Code: 161005 Date: 24/10/2016 **Subject Name: Optical Communication** Time: 10:30 AM to 01:00 PM **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Explain advantage of fiber optic over convectional copper wire. **07** (a) Draw and explain basic optical communication system block diagram. 07 **(b) Q.2** Compare multimode step index fiber and Multimode graded index fiber. 07 (a) Explain basic three mechanisms (Absorption, Spontaneous emission, Simulated **(b)** 07 emission) for lasing action with diagram. Derive the equation of Numerical Aperture (NA) for step index fiber. **07 (b)** Q.3 07 (a) Compare Laser and LED. Define (1) carrier confinement (2)optical confinement (3) normalized frequency 07 **(b)** (4) Radiance OR **Q.3** Explain edge emitter LED with neat sketch. 07 (a) Explain Febry prot laser cavity with necessary sketch. **(b) 07** What is dispersion? Compare Intramodal dispersion and Internal Modal **Q.4** (a) 07 dispersion. **(b)** Compare PIN and APD photo detector in detail. 07 0.4 What is RAPD? Explain its advantage over APD with diagram. 07 (a) Explain Inter Symbol Interference with neat diagram. **(b)** 07 **Q.5** Write a S.N. on SONET/SDH. 07 (a)

\*\*\*\*\*

Explain any one attenuation measurement technique for optical fiber.

OR

Write S.N. on WDM

Explain Optical coupler with neat sketch.

**(b)** 

(a)

**(b)** 

Q.5

07

07

07