

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI • EXAMINATION – WINTER 2013

Subject Code: 161005**Date: 04-12-2013****Subject Name: Optical Communication****Time: 02:30 pm to 05:00 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** (a) Give optical spectral bands and explain it also draw optical windows and explain it. **07**
- (b) Give difference between graded index and step index also define birefringence and V number **07**

- Q.2** (a) Explain attenuation in optical fiber with required figure and equation Also give comparison of intermodal and intramodal dispersion **07**
- (b) List the methods used to reduce the dispersion in the Fiber optics communication and explain it. **07**

OR

- (b) What is scattering Losses List the methods used to reduce the scattering losses in the Fiber optics communication and explain it. **07**
- Q.3** (a) A optical fiber have relative refractive index difference of 0.45% and acceptance angle for the fiber in 0.115 radian. Find the speed of light in the fiber core. **07**
- (b) List the types of Light Emitting Diodes used in optical system and explain any one of them with required figure. **07**

OR

- Q.3** (a) A multimode step index fiber have core diameter of 60 μm and relative refractive index difference is 1%. Operates on the wavelength of 0.8 μm . If refractive index of core is 1.5 determine normalized frequency and number of approximate modes it will support. **07**
- (b) List the different types of lensing schemes used in optical system and explain it. **07**

- Q.4** (a) List the types of photo detector used in optical system and explain structure and operating principle of any one in detail. **07**
- (b) List the factors that decides the performance of optical reception and explain it. Also draw and explain eye diagram in detail. **07**

OR

- Q.4** (a) Draw the point to point link of optical communication system and explain it for calculating Link budget equation. **07**
- Q.4** (b) List the types of optical amplifier used for optical system and explain any one of them in detail. **07**

- Q.5** (a) With the help of necessary figure properly explain DWDM in detail. **07**
- (b) What is optical coupler ? Draw and explain optical coupler in detail. **07**

OR

- Q.5** (a) Draw and Explain set ups for the measurements of the attenuation. **07**
- (b) Draw and explain set ups for the measurements of the dispersion. **07**
