

GUJARAT TECHNOLOGICAL UNIVERSITY**ME Semester –II Examination Dec. - 2011****Subject code: 1722701****Date: 09/12/2011****Subject Name: Optical Network****Time: 02.30 pm – 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)** Answer the following. **08**
- (i) Explain the operating principle of erbium doped fiber amplifier.
 - (ii) Draw the optical layer model and discuss the responsibility of each layer in brief. How it differ from OSI reference model?
- (b)** Answer the following. **06**
- (i) Define and explain the polarization mode dispersion (PMD)
 - (ii) Explain the principle of WDM with neat diagram
- Q.2 (a)** Explain the operational principle of the 2x2 fiber coupler and derive the equation for splitting ratio, excess loss and insertion loss. **07**
- (b)** Explain the various optical network topologies and discuss the performance of passive linear buses. **07**
- OR**
- (b)** What is the use fiber multiplexer? Explain the working principle of matched zehnder interferometer multiplexer. **07**
- Q.3 (a)** Explain the basic frame structure of STS-1 and STS-N of SONET frames. **07**
- (b)** Explain the OC-192 four fiber bidirectional line switched ring (BLSR). What are its applications? **07**
- OR**
- Q.3 (a)** Define and explain the following terms of optical communication. **07**
Bragg Gratings (ii) Chromatic dispersion (iii) Solitons
- (b)** Write short note on generic framing procedure (GFP) **07**
- Q.4 (a)** What is the use of OADM? Explain the architecture of optical add/drop multiplexers. **07**
- (b)** Explain the intra channel and inter channel cross talk in optical communication. How the crosstalk can be reduce in optical link? **07**
- OR**
- Q.4 (a)** What are the applications of optical switches? Explain the micro-electro mechanical system switches and electro-optic switches. **07**
- (b)** Explain the optical packet switching technique in detail. **07**
- Q.5 (a)** What is network survivability? Explain the predesigned protection techniques in point to point link and resilient packet ring. **07**
- (b)** Write short note on optical transport network **07**
- OR**
- Q.5 (a)** What is storage area network? Explain storage area network architecture and fiber channel of SAN. **07**
- (b)** Write short notes on : **07**
(i) Wavelength conversion (ii) Optical Crossconnects
