

B.E. Instrumentation Engineering (Model Curriculum) Semester - IV  
**IN401M - Fundamentals of Optical Communication**

P. Pages : 1

Time : Three Hours



**GUG/S/23/14014**

Max. Marks : 80

- Notes :
1. Same Answer book must be used for each section.
  2. All questions carry marks as indicated.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Assume suitable data wherever necessary.
  5. Retain the construction lines.

1. a) Define modulation. Justify the need of modulation. List the advantages of modulation. 8  
b) For an amplitude modulated wave, the maximum amplitude is found to be 10V while minimum amplitude is found to be 6V. Determine the % modulation index and amplitude of original carrier wave. 8

**OR**

2. a) Describe the block diagram of phase discrimination method of FM demodulator. 8  
b) Describe with neat block diagram the operation of AM transmitter. 8
3. a) Discuss the working of Delta Modulation. 8  
b) Elaborate the characteristics of radio receiver. 8

**OR**

4. a) Elaborate the operation of Differential pulse Code Modulation with neat block diagram. 8  
b) Elaborate the terms sampling and quantization with waveforms. 8
5. a) What are the advantages of Digital display over analog display? 8  
b) Elaborate the working construction of incandescent lamp with neat diagram. 8

**OR**

6. a) Describe p-i-n photodiode in detail. 8  
b) Elaborate the construction of He-Ne laser with energy level diagram. 8
7. a) Discuss the advantages of fiber optics communication in detail 8  
b) Differential multimode and single mode fibers. 8

**OR**

8. a) Describe the major coupling components of an optical fiber. 8  
b) Discuss the losses occurred in optical fibers. 8
9. a) Describe the fiber optical technique for the measurement of flow. 8  
b) Elaborate the design concept of optical power meter. 8

**OR**

10. a) Discuss the working of spectrum analyzer. 8  
b) Describe the fiber optical technique for the measurement of level. 8

\*\*\*\*\*