B.E. / B.Tech. (Instrumentation Engineering) Model Curriculum Semester-IV

IN401M - Fundamental of Optical Communication

P. Pages : 2 **GUG/W/24/14014**

Time : Three Hours * 5 5 5 5 * 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. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Describe with neat block diagram the operation of AM transmitters. **8**

b) Describe the block diagram of phase discrimination method of FM demodulator. **8**

OR

2. a) Elaborate the working operation of envelop detector. **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**

3. a) Discuss with the aid of block diagram the principle of super heterodyne receiver. **8**

b) Discuss the working of Delta Modulation. **8**

OR

4. a) Describe with neat block diagram the working operation of Pulse Code Modulation. **8**

b) Elaborate the advantages of digital communication over analog communication. **8**

5. a) Discuss the basic steps required to form the laser beam. What are the advantages of laser source with other light source? **8**

b) Elaborate with neat circuit the driving circuit of seven segment common anode display. **8**

OR

6. a) Describe the working construction of He-Ne laser. **8**

b) Give the requirements of optical detectors. Explain the basic principle of light detection in p-n photodiode. **8**

7.	a)	Discuss the advantages of fiber optics communication in detail.	**8**
	b)	Differentiate step index and graded index fibers. And derive the relationship between NA and Acceptance angle.	**8**

OR

8.	a)	Describe the major coupling components of an optical fiber.	**8**
	b)	Elaborate Wavelength Division Multiplexing of optical fiber communication.	**8**
9.	a)	Describe the fiber optical technique for the measurement of level.	**8**
	b)	Elaborate the design concept of optical power meter.	**8**

OR

10.	a)	Describe the fiber optical technique for the measurement of flow.	**8**
	b)	Elaborate the opto-coupler circuit with neat circuit diagram.	**8**

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