Total No. of printed pages = 3

Et-603/OFC/6th Sem/ETC/2017/M

OPTICAL FIBER COMMUNICATION

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What are lenses ? Explain the concept of numerical aperture.

   (b) Differentiate between reflection and refraction. What do you understand by electromagnetic wave dispersion ? Explain.

   2+4+3+5=14

2. (a) Discuss the process of construction of an optical fiber cable.

   (b) What are modes ? Differentiate between step index and graded index multimode fibers.

   6+2+6=14

[Turn over

(b) Explain what do you understand by ...

(c) Discuss the principle of operation of ... emitting LED.

6+4+4=

4. (a) Discuss in bri...

(b) What are the basic functional elements ... receiver ?

(c) With the help of a block diagram explain the working of an optical detector.

3+3+8=14

5. (a) What are connectors ? State the major reasons for connector attenuation and give neat diagrams if applicable.

(b) Differentiate beteween directional and bi-directional couplers.

5+5+4=14

3. (a) State and discuss in brief the key operational characteristics necessary for fiber optic communication.

(b) Explain what do you understand by the terms "Stimulated emission" and "Population inversion".

(c) Discuss the principle of operation of an Edge emitting LED. 6+4+4=14

4. (a) Discuss in brief the basic concept of photo detection.

(b) What are the basic functional elements of a receiver ?

(c) With the help of a block diagram, explain the working of an optical detector. 3+3+8=14

5. (a) What are connectors ? State the major reasons for connector attenuation and give neat diagrams if applicable.

(b) Differentiate beteween directional and bi-directional couplers. 5+5+4=14

6. (a) What are the different multiplexing techniques used in optical communication ?

(b) With the help of neat waveforms, explain the process of RZ, Miller and Manchester coding techniques used for digital modulation.

7+7=14

7. Write short notes on any two : 7×2=14

(i) Polarization

(ii) Photo multiplier

(iii) Laser

(iv) Application of optical Fiber communication.