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**BIEL-017**

01751

# B.Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

## Term-End Examination

## December, 2013

## BIEL-017 : OPTICAL FIBER COMMUNICATION

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *(i) Attempt **any seven** questions.*

*(ii) All questions carry **equal marks**.*

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**1.** (a) Discuss in detail the elements of optical fiber transmission link. 5

(b) Explain advantages of optical communication over conventional communication system. 5

**2.** (a) Derive the expressions for elliptical and circular polarization and explain. 5

(b) Define refractive index, reflection, refraction and acceptance angle. 5

**3.** (a) Explain various modes in a planar and cylindrical guide. 5

(b) Explain the types of fiber material and discuss the challenges to select material for optical fiber. 5

**4.** Define attenuation and explain various types of absorption and losses in optical fiber communication system. **10**

5. (a) Draw an expression for overall fiber dispersion. 5

(b) Define and explain dispersion shifted and dispersion flattered fibers. 5

6. What characteristics should a LED possess to be useful in fiber transmission ? Discuss two basic LED configurations. 10

7. Discuss characteristics of photo detectors. Explain concept of photo transistor and photo conductor in detection. 10

8. (a) What are the various noise sources in optical communication detection process ? 5

(b) Discuss briefly noise in APD receivers. 5

9. (a) Discuss different type of pre-amplifier used in optical communication system. 5

(b) What is AGC equalization ? Why it is required ? 5

10. Write a note on **any two** of the following : 2x5=10

(a) Edge emitting LED's.

(b) Reusability and laser line width.

(c) BER of optical receiver.