

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018**

Branch: M. Tech. (E&TC)

**Subject with Subject Code: Optical Fiber Communication
[MTEEE233E]**

Semester: II

Marks: 60

Date: 18 / 05 / 2018

Time: 3 Hrs.

Instructions to the Students:

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Use of non-programmable calculators is allowed.

- Q.1. A] Describe the ray theory and its importance in optical fiber communication. 06
- B] What is a meridional and skew rays? How they help in working of optical fiber. 06
- Q.2. A] Discuss the concept of mode field diameter. Explain its physical significance in the working of optical fibers. 06
- B] Numerical aperture is the universal quality measure of an optical fiber: Justify the statement. 06
- Q.3. Attempt any *two* of the followings.
- A] Discuss the modal analysis in graded indexed fiber. 06
- B] Write a short note on fiber slices. 06
- C] List and explain various fiber connectors and cables. 06
- Q.4. A] List and explain different losses occurs in optical fibers. Also suggest how to overcome each. 06
- B] Discuss the physical significance of group and phase velocity in optical fibers. 06
- Q.5. A] What is dispersion? Discuss the phenomenon of intermodal and intramodal dispersion. 06
- B] Discuss the non-linear effects in optical fiber 03
- C] Explain the concept of fiber Birefringence and polarization mode dispersion. 03

Q.6. Write a note on any *three* of the followings.

- A] Optical Solitons.
- B] Fiber Bragg grating
- C] Photonic Crystal fibers
- D] Erbium-doped fiber amplifiers

04

04

04

04