

School: SOE	Level: BE	Invigilator's Sign: .....
Program: BEEE	Year/Part: IV/I	Superintendent's Sign: .....
<b>Subject: Optical Fibre Communication (EG717EX)</b>		Code No. ....

- i. Answers should be given by filling the Multiple-Choice Questions' Answer Sheet.  
ii. The main answer sheet can be used for rough work.

Code No.

**GROUP A (Multiple-Choice Questions)**

**[10x1=10]**

**Time: 20 Minutes**

**1. What is the phenomenon that allows light to propagate through optical fibers?**

- A. Reflection  
B. Refraction  
C. Total internal reflection  
D. Diffraction

**2. Skew rays contribute to light propagation in**

- a) Step-index fibers only  
b) Graded-index fibers only  
c) Both step-index and graded-index fibers  
d) Only plastic fibers

**3. Graded-index fibers reduce modal dispersion by:**

- a) Using a smaller core  
b) Gradually changing the refractive index of the core  
c) Increasing core-cladding difference  
d) Decreasing light wavelength

**4. The main cause of attenuation in optical fiber is:**

- a) External interference  
b) Absorption and scattering losses  
c) Electrical noise  
d) Reflection at the receiver end

**5. The most commonly used optical sources in fiber optic communication are:**

- a) Incandescent lamps and halogen bulbs  
b) LEDs and Laser Diodes  
c) Fluorescent lamps  
d) Xenon lamps

**6. Modulation in LEDs refers to:**

- a) Changing the wavelength of light  
b) Controlling the intensity of emitted light according to an electrical signal  
c) Adjusting the LED temperature  
d) Altering the color of light

**7. A photodiode operates based on the principle of:**

- a) Electroluminescence  
b) Photoelectric effect  
c) Thermal conduction  
d) Magnetic induction

**8. Raman optical amplifiers work on the principle of:**

- a) Stimulated emission of radiation  
b) Stimulated Raman scattering  
c) Photoelectric effect  
d) Absorption

**9. Mach-Zehnder Interferometers are commonly used in:**

- a) Optical modulators  
b) Optical switches  
c) Sensors (temperature, strain, pressure)  
d) All of the above

**10. Optical power meters are essential for:**

- a) Installing and maintaining fiber optic networks  
b) Amplifier testing  
c) Link troubleshooting  
d) All of the above

**Multiple Choice Questions' Answer Sheet**

Marks Secured: \_\_\_\_\_

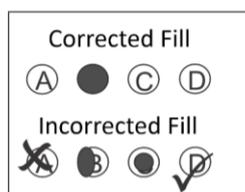
In Words: \_\_\_\_\_

Examiner's Sign: \_\_\_\_\_ Date: \_\_\_\_\_

Scrutinizer's Marks: \_\_\_\_\_

In Words: \_\_\_\_\_

Scrutinizer's Sign: \_\_\_\_\_ Date: \_\_\_\_\_



1. A B C D	6. A B C D
2. A B C D	7. A B C D
3. A B C D	8. A B C D
4. A B C D	9. A B C D
5. A B C D	10. A B C D

Manmohan Technical University  
Office of the Controller of Examinations  
**Exam Year: 2082, Mangsir(Model Question)**

School: SOE	Level: BE	Time: 3 Hours
Program: BEEE	Year/Part: IV/I	Full Marks: 50
Subject: <b>Optical Fibre Communication (EG717EX)</b>		

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.

**GROUP A** (Multiple-Choice Questions in separate paper)

[10×1=10]

**GROUP B** (Short Answer Questions - **Attempt Any Eight**)

[8×2=16]

1. What are the advantages of optical fiber over conventional copper systems?
2. Describe the ray theories in detail.
3. Discuss about different types of lensing schemes used in fiber optic system.
4. What is frequency chirping in optical fibers?
5. Write about the detector's principle of operation and its characteristics in short.
6. Explain directional couplers.
7. What are the operational principle of WDM? Discuss
8. Explain FTTH access architecture.
9. Write in short about the measurement standard used in optical fiber.

**GROUP C** (Long Answer Questions - **Attempt Any Six**)

[6×4=24]

1. How light gets propagated in optical fiber? explain in detail with necessary diagrams
2. Explain any one cause of signal degradation in optical fiber .
3. Write in detail functional block diagram of transmitter and receiver module.
4. What is Raman amplifier?
5. An optical fiber link is **10 km** long.  
The fiber has an **attenuation of 0.4 dB/km**, and there are **two connectors** (each 1 dB loss) and **one splice** (0.5 dB loss).
  - a. The optical source has a **power output of –3 dBm**, and the receiver has a **sensitivity of –25 dBm**.
  - b. **Determine whether the link will operate satisfactorily.**
6. Discuss about SONET/SDH in detail.
7. Write short notes on
  - a. Fiber types
  - b. Rise time

\*\*\*All The Best\*\*\*