

17633

11920

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: **20****
- a) Draw the block diagram of OFC system and explain it.
 - b) Explain polarization concept of light.
 - c) Draw and explain construction diagram of surface emitting LED as optical source.
 - d) Write six advantages and two disadvantages of OFC.
 - e) Draw and explain spectral band designation used in OFC.
 - f) Explain reflection and refraction of light.
 - g) Draw and explain construction of optical fibre cable. State the function of each element.

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- 2. Attempt any FOUR of the following:** **16**
- a) Explain refractive index and critical angle of optical fiber.
 - b) Write advantages and disadvantages of LED.
 - c) Explain single mode and multimode step-index optical fiber.
 - d) With the help of neat diagram, explain the working principle of laser diode.
 - e) Explain fiber misalignment and joint losses.
 - f) Write types of laser and draw the characteristic of laser diode.
- 3. Attempt any FOUR of the following:** **16**
- a) For the core refractive index of 1.50 and cladding refractive index of 1.47 determine critical angle, NA and acceptance angle.
 - b) Draw and explain the construction of submarine cable.
 - c) Explain bending and absorption losses in optical fiber.
 - d) Explain threshold current and noise characteristic of laser diode.
 - e) Explain bending loss in optical fiber.
 - f) Compare PIN photo diode and Avalanche based on :
 - (i) Working principle
 - (ii) Responsitivity
 - (iii) Efficiency
 - (iv) Photo detector noise

- 4. Attempt and FOUR of the following:** **16**
- a) Draw neat diagram and explain working of Avalanche photodiode.
 - b) Explain intermodal dispersion, loss in optical fiber.
 - c) Draw and explain construction diagram of PIN photodiode.
 - d) Explain responsivity and noise of photo detector.
 - e) Explain scattering and chromatic losses in optical fiber.
 - f) What is Fiber Slice. Explain end preparation technique of optical fiber.
- 5. Attempt any FOUR of the following:** **16**
- a) Write different types of fiber connector and explain any one.
 - b) Explain fusion splice technique of optical fiber.
 - c) What is fiber coupler. Explain how power transfer takes place in coupler.
 - d) Explain mechanical splice technique of optical fiber.
 - e) Explain operational principle of WDM.
 - f) Explain SONET optical networking.
- 6. Attempt any FOUR of the following:** **16**
- a) What is circulator. Explain optical circulator.
 - b) Draw the block diagram of OTDR and explain its working.
 - c) With the help of block diagram explain the concept of under sea optical communication system.
 - d) Explain multiple splice technique of optical fiber.
 - e) Explain standards for OFC system.
 - f) Write three advantages and disadvantages of WDM.
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