

Day: Tuesday
Date: 13/11/2018

W-2018-2636

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.
- 4) Use of non-programmable **CALCULATOR** is allowed.

Q.1 Explain : (10)
i) Total internal reflection ii) Acceptance angle
iii) Numerical aperture

OR

Q.1 a) A graded index fiber has a core with a parabolic refractive index profile which has a diameter of 50 μm . The fiber has a numerical aperture of 0.2. Estimate the total number of guided modes propagating in the fiber when it is operating at a wavelength of 1 μm . (06)
b) Describe 'Fiber bend losses.' (04)

Q.2 Explain working of 'DH Injection Laser'. Also comment on characteristics of Laser. (10)

OR

Q.2 a) Draw and explain 'LED Drive circuits for analog and digital transmission'. (06)
b) Explain 'Carrier Recombination in semiconductor.' (04)

Q.3 Describe working of p-i-n photodiode. If a germanium p-i-n photodiode with active dimensions of $100 \times 50 \mu\text{m}$ has a quantum efficiency of 55%. When operating at a wavelength of 1.3 μm . The measured dark current at this wavelength is 8 nA. Calculate the Noise Equivalent Power. (10)

OR

Q.3 a) Explain: (06)
i) Optical power budget ii) Link power budget
b) Describe working of p-n photodiode. (04)

Q.4 List basic multiplexing techniques in optical fiber system. Explain any one in detail. (10)

OR

Q.4 a) Describe working of Raman Amplifier. (06)
b) Write WDM (Wavelength Division Multiplexing) components. (04)

Q.5 Describe various optical splicing techniques in detail. (10)

OR

Q.5 a) Write a note on 'Isolators and Circulators'. (06)
b) Discuss different optical couplers. (04)

Q.6 Draw and explain the measurement of spectral loss in optical fiber. (10)

OR

Q.6 a) Explain with diagram fiber dispersion measurement in optical fiber. (06)
b) Write Industrial applications of Optical communication. (04)