

B.TECH SEM – VII (2007 COURSE) (ELECTRONICS ENGG.) :
SUMMER - 2018
SUBJECT: ELECTIVE I: OPTO ELECTRONICS

Day: Saturday
Date: 26/05/2018

S-2018-2788

Time: 02.30 PM TO 05.30 PM
Max. Marks: 80

N.B:

- 1) **Q.No.1 and Q.No.5** are **compulsory**. Out of the remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Assume suitable data if necessary.

SECTION-I

- Q.1** a) Describe working of 'DH LED'. (05)
b) Explain working principle of photo detection. (05)
c) Explain Holographic techniques. (04)
- Q.2** a) Describe construction and working of Edge Emitting LEDs. (07)
b) Explain Laser diodes with single mode operation. (06)
- Q.3** a) When 3×10^{11} photons each with a wavelength of $0.80 \mu m$ are incident on a photodiode, on average 1.2×10^{11} electrons are collected at terminals of device. Determine the quantum efficiency and responsivity of photodiode at $0.80 \mu m$. (07)
b) Describe typical IR detectors. (06)
- Q.4** a) Describe different isolation techniques. (07)
b) Write applications of opto-isolators. (06)

SECTION-II

- Q.5** a) Compare step index and graded index fiber. (05)
b) State and explain different types of connectors used in optical fibers. (05)
c) Write a note on military application of optical fiber. (04)
- Q.6** a) Describe the phenomena of modal noise in optical fibers. How it can be minimized. (07)
b) Describe Attenuation, dispersion and bending loss in optical fiber. (06)
- Q.7** a) Draw and explain various LED drive circuits. (07)
b) Describe optical power budget and Rise time budget. (06)
- Q.8** a) List different types of optical amplifier and explain in detail. (07)
b) Explain Long haul links in detail. (06)

* * * * *