Seventh Semester B.Tech. Degree Examination, November 2017
(2013 Scheme)
13.705.4 : OPTOELECTRONIC DEVICES (T)
(Elective – III)

Time : 3 Hours
Max. Marks : 100

*Instruction*: Answer all questions of Part A and one question from each Module of Part B.

**PART – A**

Each question carries 2 marks.

1. Distinguish first order and second order Stark effect.

2. Give the working principle of LED and LASER diode.

3. What is Auger effect and Auger electrone ?

4. What is the need of optical switching ?

5. Write notes on Bragg modulator.

6. Explain avalanche effect.

7. Write notes on micro cavity photo diode.

8. Give the difference between hybrid and monolithic circuits.

9. With a diagram explain the use of directional coupler.

10. Give the function of optical isolators.

P.T.O.
PART - B

Each question carries 20 marks.

Module - 1

11. a) Explain and derive the threshold condition for laser action. 7
b) Describe electro luminescence effect. 7
c) How do you measure the threshold current in a laser diode? 6

12. a) What is population inversion? What are the necessary conditions of laser action? 10
b) Write notes on axial and transverse laser modes. 10

Module - 2

13. a) What is electro optic effect? How can this effect be used for modulating the phase of an optical signal? 12
b) Explain about Raman-Nathmodulator. 8

14. a) Describe about optical cross connect architecture. 8
b) Explain optical burst switching and optical packet switching. 12

Module - 3

15. a) Give the working principle of APD and explain. 10
b) A silicon APD has a quantum efficiency of 65% at a wavelength of 900 nm. Suppose 0-5 μ watt of optical power produces a multiplied photo current of 10 μ A. Find multiplication factor M. 10

16. a) Write notes on fibre optic gyros. 10
b) Give the structure and application of Schottky barrier photo diode. 5
c) Explain about integrated receivers. 5

Module - 4

17. a) Explain about optical circulators. 8
b) What is the use of Gratings? Explain transmission grating and reflection gratings. 12

18. a) What are wavelength converters? Explain about any one type of such device. 10
b) Write notes on optical Add/Drop multiplexers. 10