Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MEVD-301 (A)

M.E./M.Tech., III Semester

Examination, June 2016

Opto-Electronics Integrated Circuits (Elective-IV)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Discuss the theory of optical wave guide using two dimensional wave guide system. 7
   b) What are the different types of wave guide modes and also explain the mode cutoff conditions. 7

2. a) Explain the fabrication of an optical wave guide by vacuum decomposition technique. 7
   b) Explain about the expatial growth of III-V compound semiconductor materials. 7

3. a) Explain the working principle of couplers in optical system. Also discuss the application of prism couplers. 7
   b) Discuss the principle working of Directional couplers and its applications. 7

4. a) Explain the working of laser and obtain the expression of optical gain for laser reaching lasing threshold. 7
   b) With the help of equivalent circuit derive the expression of photodetector noise current. 7

5. Explain the working of wave guide modulators. Also elaborate about acoustic optic effect in modulators. 14

6. Discuss about state of the art technology in guided wave devices and its application. 14

7. a) The measured optical output power from ports 3 and 4 of a multimode fiber coupler are 47.0 μw and 52.0 μw, respectively. Calculate excess loss for the device if power at port 2 is 116.3 μw. Calculate the insertion loss between the input and output ports as well as split ratio of the device. 7
   b) Discuss the principle working of tunable laser diodes. 7

8. Write short notes on any two of the following : 14
   a) Wet and dry etching techniques
   b) Magneto-optic effect
   c) Transcendental equation in wave guide
   d) DFB laser

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