

ET 371 R

B.Tech. DEGREE EXAMINATION, NOVEMBER 2009.

Seventh Semester

ECE

MICROWAVE AND OPTICAL ENGINEERING

(For 2003 batches)

Time : Three hours

Maximum : 75 marks

Answer FIVE questions, by choosing ONE full question from each unit.

All questions carry equal marks.

UNIT I

1. (a) Describe the process of bunching and velocity modulation of reflex klystron. (8)

(b) Explain mode patterns of reflex klystron. (7)

Or

2. (a) What are the various modes of operation of bipolar transistor? Explain briefly. (7)

(b) Draw the types of impatt diodes with dropping profiles. Derive the negative resistance, output power and efficiency from small signal model. (8)

UNIT II

3. (a) Write the relation between S and ABCD parameters. Explain unitary property of scattering parameters. (7)

(b) Two transmission lines of z_1 and z_2 are joined at plane pp' . Express as parameters in terms of impedance. (8)

Or

4. (a) Explain a two port network. (8)

(b) Write about various losses in microwave devices in terms of S parameters when ports are matched terminated. (7)

UNIT III

5. (a) Write about attenuation losses. (8)

(b) Derive expression for group delay. (7)

Or

6. (a) Explain radiation losses. (7)

(b) Write about

(i) Modal noise

(ii) Model partition noise

(iii) Reflection noise (8)

UNIT IV

7. (a) Draw and explain various structures of laser diode. (8)

(b) Draw and explain various current confinement methods. (7)

Or

8. (a) What are the requirements of photodetectors? Write about various characteristics of photo diode. (7)

(b) Explain about fundamental receiver configuration. (8)

UNIT V

9. (a) Write briefly about the concept of SONET. (7)

(b) Explain the power budget analysis of optical systems. (8)

Or

10. (a) Write short notes on Active Optical Network (AON). (8)

(b) Write short notes on Passive Optical Network (PON). (7)