Code: EC6T3

III B.Tech - II Semester – Regular Examinations – April 2016

MICROWAVE ENGINEERING
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70
Answer any FIVE questions.   All questions carry equal marks

1. a) Discuss the effects of microwave radiation hazards.   5 M

   b) Name different Electromagnetic frequency spectrum regions, and microwave band designations and write the application of various bands.   9 M

2. a) Explain velocity modulation of a reflex klystron and derive the expression for round trip transit time in the repeller region.   9 M

   b) A reflex klystron operates at the peak mode of $n = 2$ with Beam voltage $V_0 = 300V$ Beam current $I_0 = 20mA$, Signal Voltage $V_1 = 40V$.   5 M
   Determine: i) input power in watts.
                   ii) Output power in watts   iii) The efficiency.

3. a) What is the use of a slow wave structure in TWT and write about different types of slow wave structures.   7 M

   b) How a PI – mode can be separated in magnetron.   7 M

4. a) What are different types of attenuators ? Give its applications. 7 M

 b) Explain the constructional and working principle of two-hole directional coupler. 7 M

5. a) Explain the working of Gyrator based on Faraday rotation. 8 M

 b) Derive Scattering matrix of H-plane Tee using S-parameter theory. 6 M

6. a) With the help of two valley theory, explain how negative resistance is created in Gunn diodes. 8 M

 b) Discuss the applications of PIN diode. 6 M

7. a) Distinguish between IMPATT, TRAPATT and BARITT diodes. 9 M

 b) List the advantages and limitations of parametric amplifiers. 5 M

8. a) Explain the method of measuring impedance at microwave Frequencies. 7 M

 b) Explain the principle of measurement of microwave power using Bolometer method. 7 M