PVP 12

Code: **ECMC2T1**

I M.Tech-II Semester–Regular/Supplementary Examinations – July 2017

SOLID STATE MICROWAVE DEVICES & CIRCUITS
(MICROWAVE & COMMUNICATION ENGINEERING)

Duration: 3 hours Max Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) What are the limitations of conventional tubes at microwave frequencies? How to overcome these? 5 M

   b) What are the different types of slow wave structures? Write their advantages. 4 M

   c) How the frequency of oscillations changes in Reflex Klystron? 5 M

2. a) Explain how tunneling action takes place in a tunnel diode? 7 M

   b) What are the applications of PIN diode? Explain any two of them. 7 M

3. a) Draw the structure of TRAPATT diode and explain its working. 7 M

b) What are the major drawbacks of avalanche devices? What limitations do this place on their application? 4 M

c) Why are IMPATT diodes noisy? 3 M

4. a) Draw V-I characteristics of Gunn diode and explain how it is used as oscillator? 7 M

b) Describe the Ridley-Watkins-Hilsum theory. 7 M

5. a) Draw the V-I characteristics of microwave Bipolar transistor and explain it. 7 M

b) What are the applications of Heterojunction bipolar transistor? 7 M

6. a) On what factors the frequency of operation of a MESFET depends? 7 M

b) Draw the structure of MOSFET and explain its working. 7 M

7. Write detailed notes on the following with reference to amplifier characterization.
   a) Power gain 5 M
   b) Stability 5 M
   c) Dynamic range 4 M

8. a) Explain the working of wide-band tunable oscillators. 7 M

b) Explain three-port S-parameter characterization of transistors. 7 M