PVP 12

Code: **ECMC2T1**

I M.Tech - II Semester - Regular Examinations - December 2013

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

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Give the construction details of Magnetron and derive its expression for frequency of oscillations. 8 M

   b) Draw the circuit diagram of Two Cavity Klystron and explain its principal of operation. 3 M

   c) What is the bunching effect? 3 M

2. a) Explain principle of operation of TRAPATT with neat sketch. 7 M

   b) Explain the working of PIN diode and draw its equivalent circuit. 7 M

3. a) Why are IMPATT diode noisy? 4 M

   b) Derive the IMPATT diode impedance, power conversion and efficiency. 10 M

4. a) Explain principle of operation and V-I characteristics of HBT's with circuit diagram. 8 M

b) Give the RWH theory. 6 M

5. a) Draw the schematic of a JFET and explain principle of operation. 8 M

b) Draw the V-I characteristics of JFET. 3 M

c) What are the applications of JFET. 3 M

6. a) Explain principle of operation of MESFET with neat sketch. 6 M

b) Distinguish between MESFET and MOSFET. 4 M

c) Derive the maximum operating frequency of MOSFET. 4 M

7. a) Derive the expression for power gain, noise and stability of amplifiers. 9 M

b) Explain about non-linear behavior of amplifier. 5 M

8. a) What are the types of transistor oscillator configurations, explain any one configuration and derive the expression for frequency of oscillations. 10 M

b) What is the concept of negative resistance? 4 M