Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh semester B.Tech examinations (S), September 2020

Course Code: EC461
Course Name: MICROWAVE DEVICES ANDCIRCUITS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.   Marks

1 a) What are TRAPATT diodes? Explain elaborately their principle of operation with neat diagram.   (10)

   b) What are the limitations of conventional solid state devices at microwaves   (5)

2 a) Discuss in detail the physical structure of MESFET and explain its principle of operation.   (10)

   b) Write a short note on one port negative resistance oscillator   (5)

3 a) Explain in detail Various modes of operation of Gunn Oscillators   (8)

   b) Derive the expression for available power gain of microwave amplifier   (7)

PART B
Answer any two full questions, each carries 15 marks.

4 a) Explain in detail the concept of matching with lumped elements.   (10)

   b) Write a short note on S matrix   (5)

5 a) Explain the steps in designing a composite filter. Also write down the equations and draw the circuit for designing a composite low pass filter.   (10)

   b) Discuss the significance of k-β diagram in filter characteristics   (5)

6 a) Explain the principle of single stub tuning   (7)

   b) Design a low pass constant K filter using image parameter method.   (8)

PART C
Answer any two full questions, each carries 20 marks.

7 a) Explain the fabrication technique involved in Monolithic Microwave Integrated circuits.   (10)

   b) Discuss briefly about slot line.   (6)

   c) List down the advantages of planar transmission line.   (4)

8 a) Classify switches based on characteristics. Explain the basic configuration of PIN diode switches.   (12)

b) Explain the configuration of distributed ferrite circulators. (4)

c) Write a short note on inductors. (4)

9 a) Differentiate strip line and microstrip line. (6)

b) Explain attenuators with neat diagram. (10)

c) Write a short note on hybrid MIC. (4)

****