Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ETE)/(ECE) (2011 Onwards) (Sem.–6)

MICROWAVE & RADAR ENGINEERING

Subject Code : BTEC-601

Paper ID : [A2315]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. **Write briefly :**

a) What is velocity modulation?

b) What are slow wave structures? Give some examples.

c) What is negative resistance?

d) How is impact ionization achieved in IMPATT diode?

e) Define policy implementation process.

f) Define faraday location.

g) What do you understand by Doppler Effect?

h) What limits the sensitivity of a radar receiver?

i) What is transit time and what are its implications?

j) Define Maser.

SECTION-B

2. With the help of an applegate diagram explain the operation of reflex klystron.

3. What is Gunn Effect? Explain domain formation in Gunn diode.

4. Describe the operation of a Two-hole Directional Coupler. Calculate Coupling Factor if the power in the primary waveguide is 72 mW and power delivered to Directional coupler is 8 mW.

5. How do you distinguish stationary targets and moving targets? Explain principle of working of MTI Radar.

6. Explain the measurement of Standing Wave Ratio Radar at microwave frequencies.

SECTION-C

7. What are cross field devices? How does a magnetron sustain its oscillations in this cross field? Assume π mode for explaining the bunching and phase focussing effect in magnetron.

8. a) A three port circulator has an insertion loss of 1 dB, isolation 30 dB and VSWR = 1.5. Find S matrix.

   b) Discuss the performance and application of avalanche diodes.

9. Write a short note on :

   a) Backward wave oscillator

   b) Monopulse Tracking