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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (E&CE) (Sem.-6)

## MICROWAVE AND ANTENNA ENGINEERING

Subject Code : BTEC-603-18

M.Code : 79376

Date of Examination: 13-12-2023

Time : 3 Hrs.

Max. Marks : 60

### INSTRUCTIONS 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 have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

### SECTION-A

1. Write briefly :

- a) State and define the two parameters that describe a directional coupler.
- b) What is velocity modulation?
- c) Define HPBW, FNBW and relation between them.
- d) What are the applications of microstrip antennas?
- e) What is an antenna array?
- f) What are the advantages of slow wave structures?
- g) Explain the phase shifter with its applications.
- h) Differentiate between klystron and magnetron based on their principle of operation.
- i) Draw and explain the diagram of slot antenna with a neat caption.
- j) What is meant by strapping?



## SECTION-B

2. What is ferrite device? Explain any two in detail with their applications.
3. Draw and explain the end fire array with a neat diagram.
4. Discuss about radiation resistance of short electric dipole.
5. Draw and explain the operation of TRAPATT device.
6. What are the properties of scattering matrix? Explain them with suitable expressions.

## SECTION-C

7. What is Microwave Amplification by Stimulated Emission of Radiation (MASER). Draw and explain its operation with a neat sketch.
8. With the help of two valley model along with the emphasis of drift velocity, explain the negative resistance property of a Gunn diode.
9. Draw and explain the principle of operation of a loop antenna with its design parameters specification.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**