

Roll No.

Total No. of Pages : 02

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B.Tech. (Electronics & Communication Engineering) (Sem.-6)

MICROWAVE AND ANTENNA ENGINEERING

Subject Code : BTEC/603/18

M.Code : 79376

Date of Examination : 08-05-2024

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. What is a multi-cavity Klystron amplifier?
- b. What is crossed field amplifier?
- c. Explain the modes of Gunn diode.
- d. What is directional coupler?
- e. What is the difference between circulator and Gyrator?
- f. Define Voltage standing wave ratio (VSWR).
- g. Define antenna beam width and radiation resistance.
- h. Define broad side antenna array.
- i. Define Loop antenna.
- j. Define Far and radiating near field.

SECTION-B

2. With the help of suitable diagram, explain the forking principle of attenuators?
3. Draw diagrams of circular cavity resonator. Derive the equation for resonant frequency in circular cavity resonator. '
4. Explain two valley model theory. Write a short note on "TRAPATT diode".
5. What are slow wave structures? Explain how a helical TWT achieve amplification.
6. Explain following antenna parameters in detail: reflection coefficient, radiation pattern, directivity and gain.

SECTION-C

7. For an end side antenna array of n elements, derive the expression of direction of pattern maxima, pattern minima and beam width of major lobe. Assume the distance between each element is ' d ' and each antenna element carries current of equal amplitude and progressive phase.
8. Describe the basic characteristics, radiation mechanism, and feeding method of microstrip patch antenna.
9. Explain junctions as a microwave component and derive the S-matrix for E and H junctions.

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.