	ADAMAS UNIVERSITY		
	END-SEMESTER EXAMINATION : JANUARY 2021		
	(Academic Session: 2020 – 21)		
Name of the Program:	B.Tech	**Semester:**	V
Paper Title :	Microwave Engineering	**Paper Code:**	EEC43107
Maximum Marks :	40	**Time duration:**	3 Hrs
Total No of questions:	8	**Total No of Pages:**	1

Instruction for the Candidate:
1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups
Group A
Answer all the questions of the following $5 \times 1 = 5$

1. a) What do you mean by S_{21}?
    b) What is the wavelength corresponding to 4 GHz?
    c) What is the frequency band from 2-4 GHz known as?
    d) When does the characteristic impedance of a transmission line becomes a real quantity?
    e) What is the angle between the direction of wave propagation and the electric field vector in TM mode?

GROUP –B
Answer *any three* of the following $3 \times 5 = 15$

2. Explain TE, TM, TEM modes of wave propagation along with proper diagram. Draw a transmission line section of length Δz and mark different components.   [3+2]
3. Describe Maxwell's equations.   [5]
4. Write a short note on EMI/EMC   [5]
5. Find out the values of propagation constant (γ) and characteristics impedance (Z_o) under the following conditions: for no loss (iii) for no distortion   [2.5+2.5]

GROUP –C
Answer *any two* of the following $2 \times 10 = 20$

6. Write Helmholtz equation. Derive Helmholtz equation from Maxwell's equation. [2+8]
7. Explain how a 4-port circulator can be realized by two Magic Tees. Explain the working principle of Microwave Isolator.   [5+5]
8. Write short notes on: (i) Two hole directional coupler (ii) Microwave Circulator [5+5]

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