Reg. No.



# FIFTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION DECEMBER 2021-JANUARY 2022 SUBJECT: MICROWAVE ENGINEERING (ECE - 3154)

#### **TIME: 75 MINUTES**

#### MAX. MARKS: 20

### Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

Q. No.	Questions	<b>M</b> *	C*	A*	<b>B</b> *
1A.	Explain H-plane Tee and derive the S-parameter matrix of it. Also, draw the electrical equivalent circuit of H-plane Tee.	5	CO1	C1	L2
1B.	Explain the working of Two hole Directional Coupler	3	CO1	C1	L2
1C.	For a Cosine source, Sketch current distribution in a half wave dipole at $t=0, t=T/8, t=T/4, t=3T/8$	2	CO3	C3	L2
2A.	The power radiated by a lossless antenna is 10 watts. The directional characteristics of the antenna are represented by the radiation intensity of U=ACos <sup>3</sup> $\theta$ W/Sr, for $0 \le \theta \le \pi/2$ & $0 \le \varphi \le 2\pi$ and is zero elsewhere. Find: (a) Maximum power density at a distance of 1000 meters. Specify the angle where this occurs. (b) Gain of the antenna in dB	5	CO3	C3	L3
2B.	Obtain the vector wave equation in terms of Magnetic Vector Potential	3	CO3	C3	L2
2C.	Explain with Mathematical expression (a) Polarization Loss factor & (b) Directivity	2	CO3	C3	L2

## M\*--Marks, C\*--CLO, A\*--AHEP LO, B\* Blooms Taxonomy Level