Fifth Semester B.E. Degree Examination, Aug./Sept. 2020 **Transmission Lines and Waveguides**

Time; 3 hrs.

Max. Marks:100

Note: 1. Answer FIVE full questions, selecting atleast TWO questions from each part. 2. Use of Smith charts is permitted.

		PART – A	
1	a. b.	A transmission line has $R = 6\Omega/km$, $L = 2.2mh/km$, $C = 0.005\mu F/km$ and G $\mu mho/km$. Determine characteristic impedance Z_0 Attenuation constant (α), phase (β) at 1KHz. If the line length is 100km, determine the attenuation and phase shi signal. Calculate the phase velocity of the signal. A certain transmission line has a characteristic impedance of 75 + j0.01 Ω and is ten	constant ft of the Marks)
2	a.b.c.	Derive the expression for velocity of propagation for transmission lines at mi frequencies. (0	8 Marks)
3	a. b. c.	Define transmission co-efficient, reflection co-efficient. (0 Describe single stub matching section. (0 A transmission line of 100m length and a characteristic impedance of 100 terminated by a load $Z_L = 100 - j200$ ohms. Using the Smith chart, determine	06 Marks) 06 Marks) ohms is
4	a. b. c.	Quarter wave line Applications of Smith chart.	08 Marks) 07 Marks) 05 Marks)
5	a. b. c.	State and prove the symmetry property for S – parameters. The S – parameters of a given two port microwave network is given by: $S_{11} = 0.2 \ \underline{0}$, $S_{22} = 0.1 \ \underline{0}$ CMRIT LIB: $S_{12} = 0.6 \ \underline{90}^{\circ}$, $S_{21} = 0.6 \ \underline{90}^{\circ}$	06 Marks) 08 Marks) PARY 560 037 06 Marks)
6	а. b.	With the aid of neat sketch, explain the operation of Hybrid Tee. What are the approf Hybrid – T?	
7	a. b.	Describe RWH theory and two – valley theory of Gunn diode. What are parametric amplifiers? Describe Manley – Rowe relations of the parameters.	12 Marks) arametric 08 Marks)
8	a. b. c.	Directional couplers	07 Marks) 07 Marks) 06 Marks)

•