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Internal Assessment Test 1 – Mar. 2018

Sub:	Microwave Theory and Antenna	Sub Code:	15TE63	Branch:	TCE
Date:	14/03/2018	Duration:	90 mins	Max Marks:	50
		Sem / Sec:			6
					OBE

Answer any FIVE FULL Questions

		MARKS	CO	RBT
1	Derive the expressions for instantaneous voltage and current at any point on the transmission line.	[10]	CO1	L3
2	A transmission line has the following parameters $R = 2 \Omega/m$, $G = 0.5 \text{ mho/m}$, $f = 1\text{GHz}$, $L = 8 \text{ nH/m}$, $C = 0.23 \text{ pF/m}$. Calculate: (a) the characteristic impedance; (b) the propagation constant.	[10]	CO1	L3
3	What is Smith Chart? With usual notations show the construction of Smith chart (Smith circle diagram).	[10]	CO1	L3
4	A transmission line 2.413 wavelength long is terminated in an impedance of $150 + j60 \Omega$. The line has negligible losses having characteristic impedance of 75Ω . Find the input impedance.	[10]	CO1	L4
5	A line of $R_0 = 400 \Omega$ is connected to a load of $200 + j300 \Omega$, which is excited by a matched generator at 800MHz. Find the location and length of a single stub nearest to the load to produce an impedance match.	[10]	CO1	L4
6	Define reflection and transmission coefficients. Derive expressions for both in terms of impedances and also get an expression relating them.	[10]	CO1	L3
7	A lossless line of characteristic impedance $R_0 = 50 \Omega$ is to be matched to a load $Z_l = \frac{50}{[2 + j(2 + \sqrt{3})]} \Omega$ by means of a lossless short-circuited stub. The characteristic impedance of the stub is 100Ω . Find the stub position (closest to the load) and the length so that a match is obtained.	[10]	CO1	L4
8.	With the help of neat sketch, explain the working of reflex klystron oscillator. Discuss modes of oscillation.	[10]	CO1	L2

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