The LNM Institute of Information Technology, Jaipur

Department of Electronics and Communication Engineering

Engineering Electromagnetics (ECE 335)

Exam Type: Quiz | **Academic Year:** 2017-18 | **Semester:** ODD

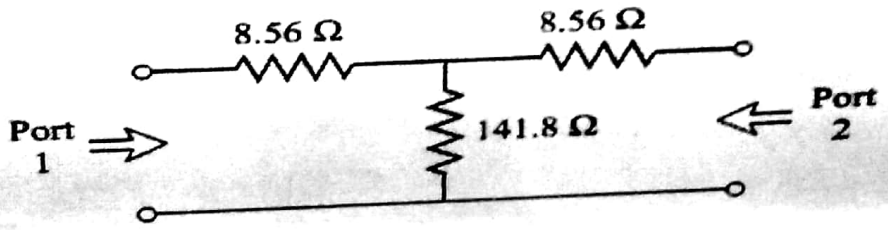
Degree*:** B.Tech* | ***Programme*:** B.Tech in ECE | ***Year: 2nd and 3rd

Time : 60 minutes | **Date:** 19/09/2017 | **Maximum Marks:** 30

	CO1	CO2	CO3	CO4	CO5
Questions	1,2a	3,4	-	-	-
Marks	6+2	22	-	-	-
Marks/Max Marks(%)	27	73	-	-	-

Instruction: *Write answer to all parts of question in same place. Write Roll no on top right corner of the smith chart.*

[Q1]. Find the scattering parameters of the 3 dB attenuator with characteristic impedence 50 Ω circuit shown in figure below. Also find Z_{11}



[2+2+2=6]

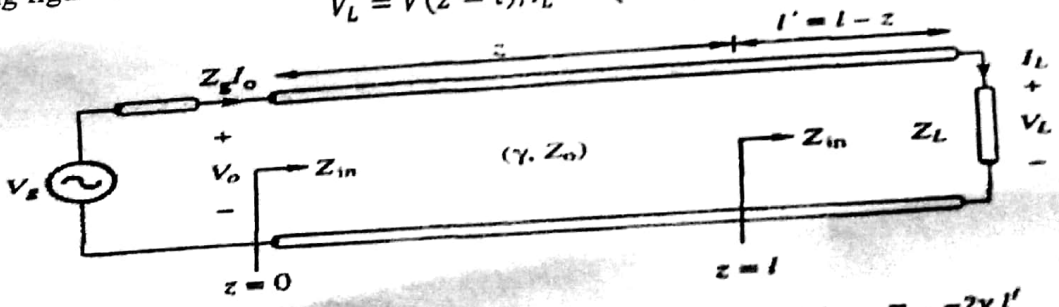
[Q2]. A telephone line opearted at 1 kHz has $R = 30\ \Omega/km, L = 100\ mH/km, G = 0, and\ C = 20\ \mu F/km$. obtain

(a) The value of α in *dB/km.*

(b) The characteristic impedance of the line.

[2+2=4]

Q3]. (a) In the following figure derive equations for V_0^+ and V_0^-. Given the conditions at the load $V_L = V(z = l), I_L = I(z = l)$



(b) Show that the voltage reflection coefficient at any point on the line is given by $\Gamma(z) = \Gamma_L e^{-2\gamma l'}$

[4+4=8]

[Q4]. A 30-m- long transmission line with $Z_0 = 50\ \Omega$ operating at 2 MHz is terminated with a load $Z_L = 60 + j40\ \Omega$. If the velocity of propagation on the line is u = 0.6C, find **with and without using Smith Chart**

(a) The reflection coefficient Γ

(b) The standing Wave Ratio S

(c) The input impedence.

Use different color to indicate clearly the impedence and admittance. Label points.

[(2+2+2)+(2+2+2)=12]

(5)