SCAN ME

VIT

Vellore Institute of Technology

Continuous Assessment Test – I

Winter Semester : 2019-2020

Programme Name & Branch: B.Tech & ECE

Course Code & Name: ECE 2004 - Transmission Lines and Waveguides

Slot: D1+TD1 **Exam Duration: 90 Min.** **Maximum Marks: 50**

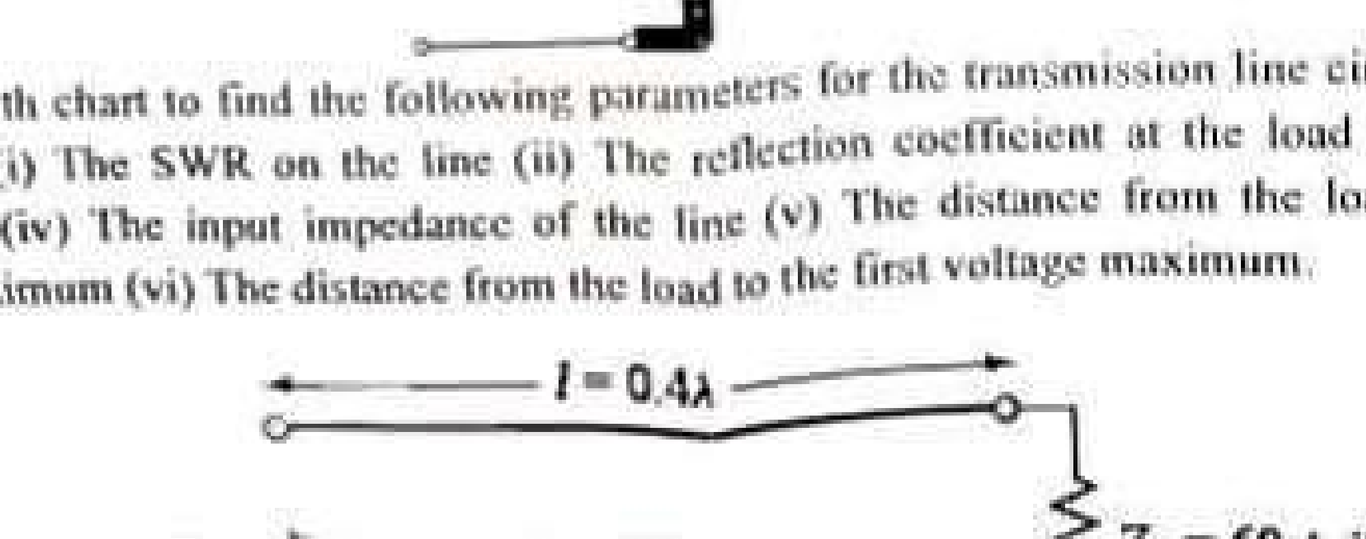
Answer all the questions

1. The following charaacteristics have been measured on a lossy transmission line at 100 MHz. (10)
$Z_o=50+j0\ \Omega$, $\alpha=0.01$ dB/m, $\beta=0.8\pi$ rad/m. Determine R,L,G, C and v_p for the line.

2. Derive Telegraphers equations and general solution using equivalent lumped circuit model of (10)
transmissions line.

3. A radio transmitter is connected to an antenna of 100+j50 Ω fed by a lossless transmission line (5)
which has equivalent capacitance of 100 pF and 0.562 μH inductance. Calculate the power delivered to the antenna for 40 W of transmitter power.

4. In the circuit shown, all the transmission line sections are lossless. Find the voltage standing (5)
wave ratio (VSWR) on the line.



5. A 300 Ω lossless air transmission line is connected to a complex load composed of a resistor in (10)
series with an inductor, as shown in the figure. At 5 MHz, determine: (i) The reflection coefficient at the load (ii) SWR (iii) Return loss and (iv) transmission coefficient.

6. Use the Smith chart to find the following parameters for the transmission line circuit shown in (10)
the figure. (i) The SWR on the line (ii) The reflection coefficient at the load (iii) The load admittance (iv) The input impedance of the line (v) The distance from the load to the first voltage minimum (vi) The distance from the load to the first voltage maximum.