Indian Institute of Space Science and Technology (IIST)
Quiz I Question Paper, September, 2022
ECE(Avionics), Electromagnetic and Wave Propagation (AV214), 3rd Semester

Marks: 15 **Time: 1 Hr.**

Answer all the questions. Make suitable assumptions if necessary.

1. A 50 Ω lossless transmission line is terminated with a load impedance $Z_L = (30 - j50)$ Ω. The wavelength is 8 cm. Find

   (a) the reflection coefficient at the load end

   (b) the standing wave ratio on the line

   (c) the position of voltage maximum nearest to the load

   (d) the position of current maximum nearest to the load $1\frac{1}{2} + 1\frac{1}{2} + 2 + 2$

2. For the transmission line network shown in Fig.1, calculate the time average power dissipated in the load resistor R_L. 4

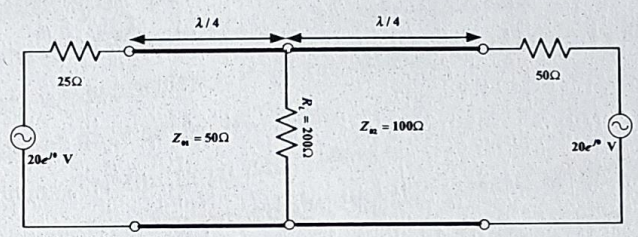

Figure 1: Q. No. 2

3. A transmission line with characteristic impedance of 150 Ω is terminated with a 50 Ω load. A distance $l = 0.375\lambda$ away from the load, an element with $jB = -j0.003$ S is connected in parallel as shown in Fig. 2. Using Smith chart only, find (a) the load impedance just to the right of $jB(Z_1)$ (b) VSWR on the line to the right of jB (c) the impedance seen from the left of jB $(Z_2)$and (d) the VSWR on the line to the left of jB. Clearly show the points on the Smith chart. 4

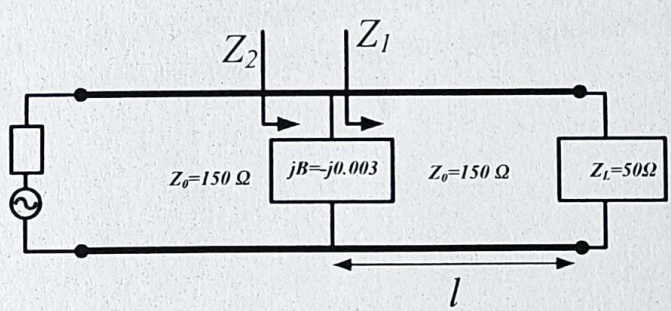

Figure 2: Q. No 3