MAKERERE UNIVERSITY

COLLEGE OF ENGINEERING, DESIGN, ART & TECHNOLOGY

SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

Assignment 1

Smith Charts

Submitted by

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19^{th} October, 2020

Solution

1.

$$Z_{\mathbf{L}} = 20 + j50\Omega$$

$$\bar{Z_{\mathbf{L}}} = \frac{20 + j50}{50}$$

$$\bar{Z_{\mathbf{L}}} = 0.4 + j1$$

(i)

$$\mathsf{SWR} = 5.2$$

(ii) Given that $l = 0.3\lambda$, we move towards the generator $(0.135 + 0.3)\lambda = 0.435\lambda$ position

$$\bar{Y_i}n = 0.75 + j1.2$$

$\therefore$

$$Y_{in} = \frac{0.75 + j1.2}{50}$$

$$Y_in = 0.015 + j0.024S$$

(iii) $l_{min} = 0.365\lambda$ (from open circuit towards the load) $l_{max} = 0.25\lambda - 0.135\lambda = 0.115\lambda$ (from ∞ towards the load)