Code No: 114DH **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, November/December - 2015
PRINCIPLES OF ELECTRICAL ENGINEERING
(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Explain the time constant of R-L circuit. [2M]
b) Explain the transient response of source free series RC circuit. [3M]
c) Define image impedance with a simple 2 port network. [2M]
d) Find the Z-parameter for the given figure 1. [3M]

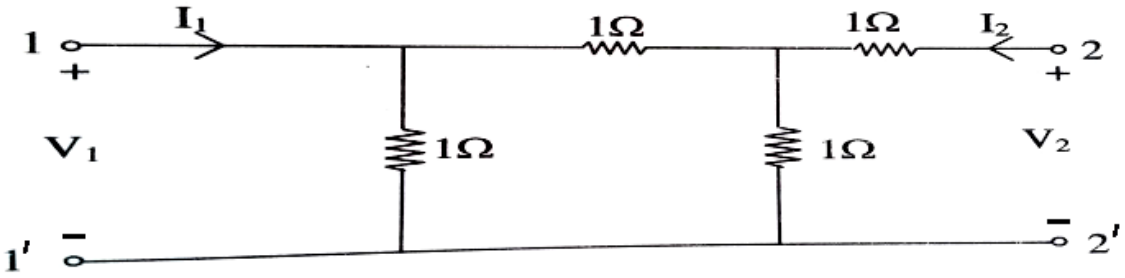

Figure: 1

e) Write about m-derived T-Section filter. [2M]
f) Explain briefly about Band-Pass and Band-Elimination filters. [3M]
g) What are the different types of DC Generators? [2M]
h) Explain the characteristics of DC motors. [3M]
i) Write the applications of stepper motor. [2M]
j) A 100 KVA, 1100/230 V, 50Hz, 1-ϕ transformer has an HV winding resistance of 0.1Ω and a leakage reactance of 0.4 Ω. The LV winding has a resistance of 0.006 Ω and a leakage reactance of 0.01 Ω. Find the equivalent winding resistance and reactance referred to HV winding side. [3M]

PART-B

(50 Marks)

2. Derive the transient response current of RLC circuit for DC excitation. [10]

OR

3. Find complete expression for i, initially no charge on capacitor as shown in figure 2. [10]

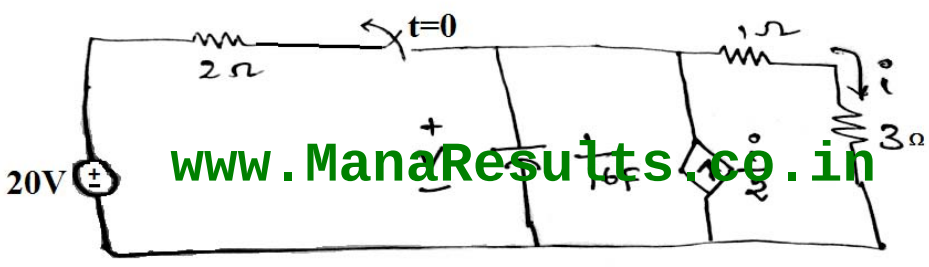

Figure: 2

4. For the given circuit find Y-parameters and Transmission-parameters of the circuit shown below figure 3. [10]

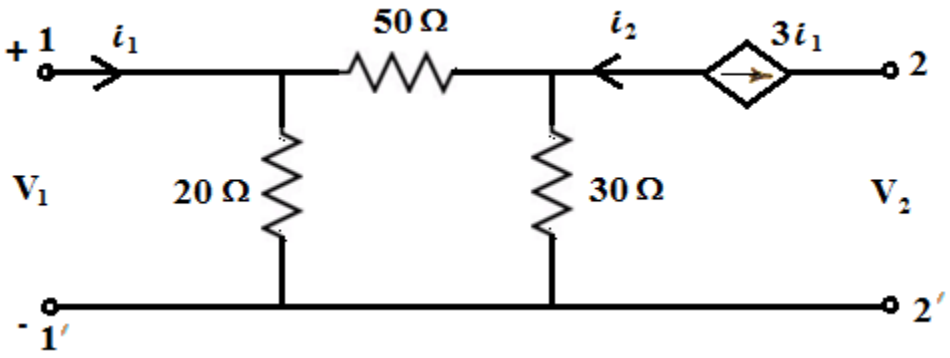

Figure: 3

OR

5. Explain the interconnection of two port network in series and parallel configurations? [10]

6. Derive the characteristic impedance in pass and stop band filters. [10]

OR

7. Explain the different types of symmetrical attenuators briefly. [10]

8. Explain the principle operation of the DC generator and derive its EMF equation. [10]

OR

9.a) Explain the different speed control methods of DC machine.
b) Explain the different losses present in DC motor. [5+5]

10. Draw and explain the phasor diagrams of 1-ϕ transformer on no-load and load conditions and explain in brief. [10]

OR

11. Explain the losses present in the transformer and derive the equation of the voltage regulation in 1-ϕ transformer. [10]

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