

Code No: 114DH

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]

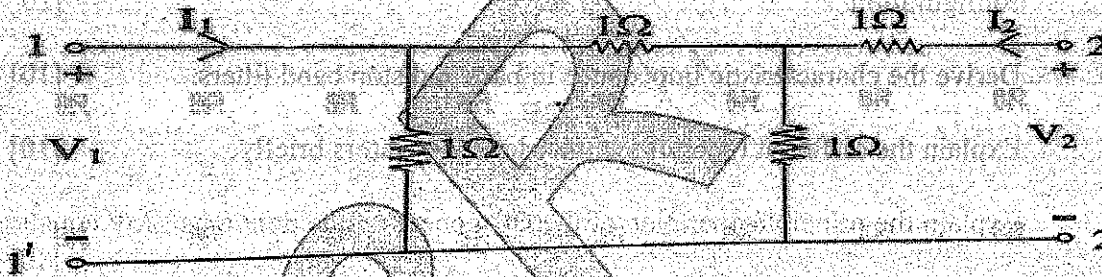


Figure: 1

- 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 0.4Ω . The LV winding has a resistance of 0.006Ω and a leakage reactance of 0.01Ω . 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]

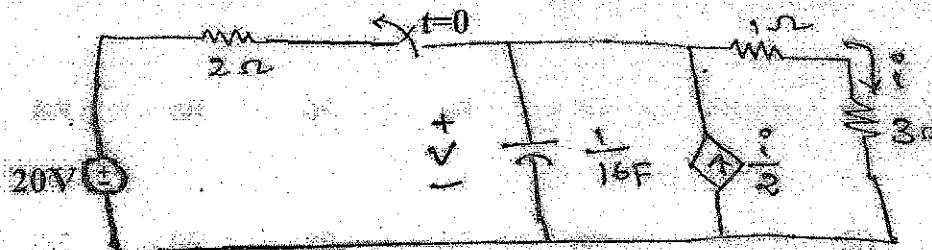


Figure: 2

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

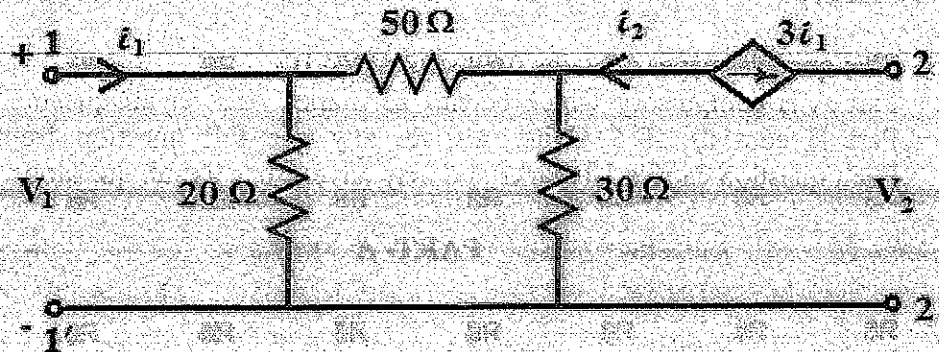


Figure: 3

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]
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. [5]
- b) Explain the different losses present in DC motor. [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]