Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 & Onwards) (Sem.–3)

NETWORK ANALYSIS AND SYNTHESIS

Subject Code : EE-201

Paper ID : [A0305]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) Differentiate between step and ramp signals.

b) State Norton's theorem.

c) What do you mean by dependent sources? Explain.

d) Differentiate between transient and steady state responses.

e) What do you mean by transfer function? Explain.

f) What is the need of network synthesis? Explain.

g) What do you mean by two terminal networks? Explain.

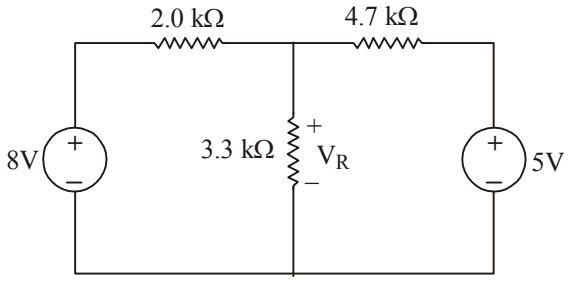
h) List the advantages and disadvantages of m derived filters.

i) Explain passband and stop band filters.

j) Draw and explain the ladder network.

SECTION-B

2. Using superposition theorem determine the voltage drop and current across the resistor 3.3K as shown in the figure below.



3. Discuss the following :

   a) Loop currents and loop equations.

   b) Classification of filters.

4. Design T section of constant k band pass filter having design impedance of 500 ohm and cut-off frequencies of 1 kHz and 10 kHz.

5. Discuss the importance of pole and zeros in a network. List the various restrictions on the pole and zero location in transfer functions.

6. Find the Laplace transform of :

   a) $(t+2)^2 e^t$

   b) u(t) - u(t-a)

SECTION-C

7. Find the first and second Foster forms of the function :

$$Z(s) = \frac{(s+1)(s+3)}{s(s+2)}$$

8. A low pass constant k filter with cut-off frequency f_c= 36 kHz is required to produce a maximum attenuation at 60kHz when used with 500 ohm termination. Design a suitable m-derived :

   a) T-section b) π- section

9. Discuss the following :

   a) Convolution theorem.

   b) Thevenin's theorem .