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Total No. of Pages : 02

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B.Tech.(Electrical Engineering & Industrial Control) (2012 Onwards)
B.Tech.(EE/Electrical & Electronics/Electronics & Electrical) (2011 Onwards)
(Sem.–3)

CIRCUIT THEORY

Subject Code : BTEE-301
M.Code : 57092

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 independent and dependent sources.

   b. What do you mean by transient response? Explain.

   c. State reciprocity theorem.

   d. Find the Laplace transform of a unit ramp function.

   e. What is the significance of transfer function? Explain.

   f. Discuss the significance of circuit theory in engineering.

   g. Discuss the need of frequency domain analysis.

   h. What do you mean by network functions? Explain.

   i. Why network synthesis is required? Explain.

   j. List the advantages of m-derived filters.

SECTION-B

2. Determine the characteristic impedance and propagation constant of the symmetrical T-network.

3 Find the voltage across X and Y using Thevenin's theorem.

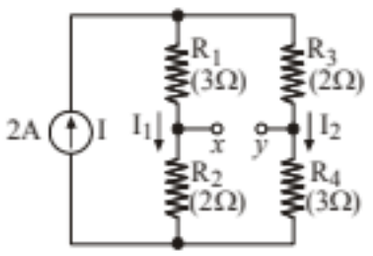

FIG.1

4. Discuss the importance of Laplace transform. Find the Laplace transform of cos ωt $u(t-t_0)$.

5. Discuss the significance of pole and zeros in a network. Also list the various restrictions on the pole and zero location in transfer functions.

6. What is the need of a filter? Discuss in detail high pass, low pass, band pass and band reject filters.

SECTION-C

7. Find the current in 10ohm resistor using superposition theorem.

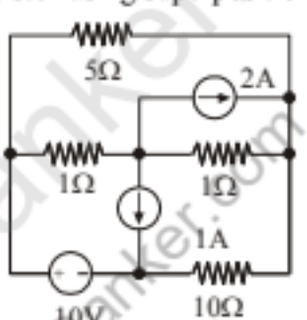

FIG.2

8. Find V_2/V_1 and V_2/I_1 of the figure shown below :

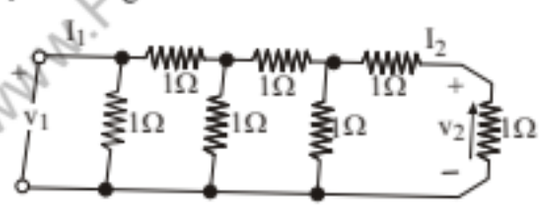

FIG.3

9. Explain the following :
   a. Design of constant K filter
   b. Convolution theorem

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.