

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) PT (Sem.-1)
CIRCUIT THEORY
Subject Code : BTEE-301
M.Code : 70971

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 & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

Write Briefly / Fill in the blanks :

1. Differentiate dependent and independent sources.
2. State Superposition Theorem.
3. Distinguish between mesh and loop of an electric circuit.
4. Define quality factor of a series resonant circuit.
5. If a unit step current is passed through a capacitor, what will be the voltage across the capacitor?
6. Explain Convolution Theorem.
7. Define a transfer function.
8. Discuss the application of impedance and admittance parameters.
9. The cut-off frequency of constant k-low pass filter is _____.
10. The network function $N(S)$ becomes _____ when s is equal to anyone of the zeros.

SECTION-B

11. Determine R_L so as to have maximum power transfer to R_L in the given circuit.

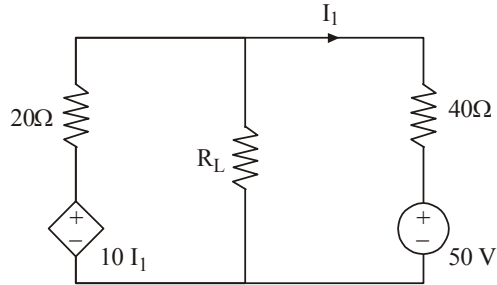


Fig. 1

12. Explain the initial value theorem.
 13. Discuss the impedance parameters of a two port network.
 14. Discuss the classification of filters.

SECTION-C

15. When is a network either T or π , is said to be of the constant-k type?
 16. Discuss the response of the given RLC circuit excited by DC supply.

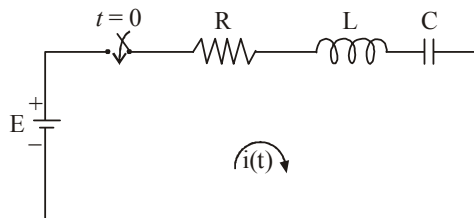


Fig. 2

17. Using Foster Form II synthesize the following function :

$$Z(s) = \frac{(s^2 + 5)(s^2 + 13)}{s(s^2 + 9)}$$

18. Write short notes :
 a) m -derived filters
 b) Cauer Forms.

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