

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE/EEE) (Sem.-3) (2011 Batch)

CIRCUIT THEORY

Subject Code : BTEE-301

Paper ID : [A1134]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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 has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**I. Write briefly :**

- a. What do you understand by independent and dependent sources?
- b. State the superposition theorem.
- c. Define step and impulse signals.
- d. What do you understand by poles and zeroes of a network?
- e. Define shifted function.
- f. Why impulse response is obtained?
- g. What is a transfer function?
- h. Define pass band and stop band. What is bandwidth?
- i. What do you understand by characteristic impedance?
- j. Why filters are required?

SECTION-B

2. Derive the condition for maximum power transfer to a load resistance in a network.

3. State and explain convolution theorem,

4. Write various network functions for the Fig 1.

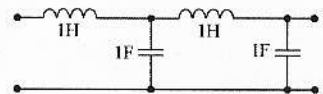


Fig 1.

5. Determine the Laplace transform of sawtooth wave

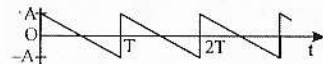


Fig 2.

6. Design a T-section and π -section of a low pass filter with 600Ω impedance and cut-off frequency

SECTION-C

7. Calculate the power delivered by each source and the 4Ω resistance of the network shown in Fig. 3

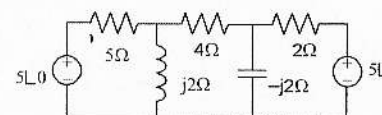


Fig.3

8. Synthesize first and second Foster and Cauer form impedance function.

$$Z(s) = (s^2 + 1)(s^2 + 16) / \{s(s^2 + 4)\}$$

9. Write short notes on any two of the following :

- a) Statement and proof of reciprocity theorem
- b) Network synthesis techniques of 2-terminal network
- c) Constant-K and m-derived filters