

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE) (2012 Onwards)/(Electrical & Electronics Engg.) (2011 Onwards)
B.Tech. (Electronics & Electrical Engg.) (2012 to 2017)
(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 :**
- Differentiate between periodic and singularity voltages.
 - State Norton's theorem.
 - What do you mean by doublet? Explain.
 - What do you mean by transient response? Explain.
 - Discuss the significance of circuit theory.
 - What do you mean by singlet? Explain.
 - What do you mean by propagation constant? Explain.
 - Explain passband and stopband with respect to filters.
 - What do you mean by the term composite filter? Explain.
 - Why network synthesis is required? Explain.

SECTION-B

2. State and prove Maximum power transfer theorem.
3. What do you mean by pole and zero? Discuss its important features and restrictions.
4. Design T section of constant k high pass filter having nominal characteristic impedance of 600 ohm, cut-off frequency is 10 kHz. Also find its characteristics impedance and phase constant.
5. Define Laplace transform. Find the Laplace transform of $\sin \omega t u(t-t_0)$
6. What is the need of a filter? Discuss the classification of filters in detail.

SECTION-C

7. Find the Thevenin's and Norton's equivalent of the circuit shown in figure, at the terminals A & B.

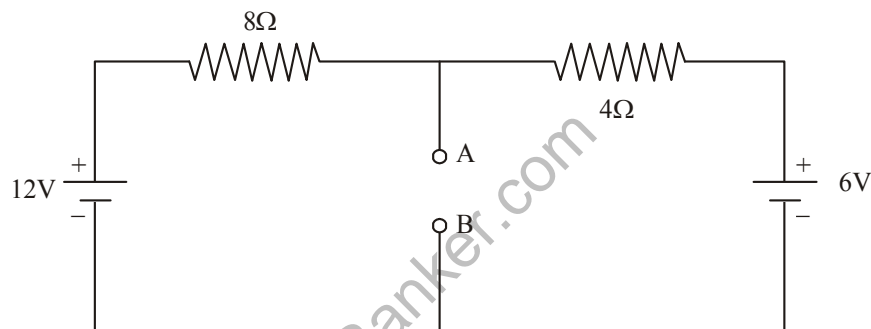


FIG.1

8. Find the first and second Foster or Cauer forms of the function :

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

9. Discuss the following
 - a. Convolution theorem
 - b. Design of m derived low pass filter

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.