

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]

May-24-0382

EC-303 (Network Analysis & Synthesis)

[ECE, EE, EEE]

B.Tech. 3rd (CBCS)

Time : 3 Hours

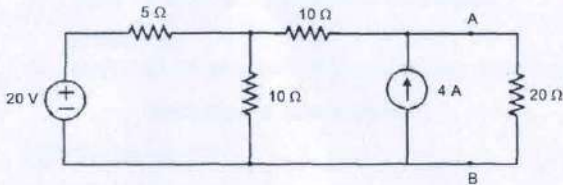
Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

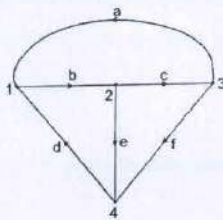
Note : Question no. 9 is Compulsory. Attempt four more questions, selecting one question each from section A, B, C & D.

SECTION - A

1. (a) State and explain Norton's theorem. (5)
- (b) Find the current flowing through 20Ω resistor by first finding a Norton's equivalent circuit to the left of terminal A and B. (5)



2. Obtain incidence matrix set and cut set matrix for graph shown. (10)



SECTION - B

3. (a) Two identical sections of resistive T network of value $R_1 = R_2 = R_3 = 10 \Omega$, are connected in Series. Calculate the Open circuit impedance parameters (Z) of resulting network. (5)
- (b) Find inverse Laplace transform of:

$$F(S) = \frac{25}{(S+10)(S+5)} \quad (5)$$

4. Find the expression for transient response of series R-L circuit. (10)

SECTION - C

5. (a) Find the relationship between h and Z Parameters of a two port network. (5)
- (b) Explain cascade connection of two port network. (5)
6. Explain the following:
 - (i) Transmission Parameters
 - (ii) Condition for Reciprocity and symmetry. (5+5=10)

SECTION - D

7. (a) State the conditions of Positive real function. Also check Positive realness of following Function:

$$Z(S) = \frac{S^2 + 10S + 4}{(S+2)} \quad (5)$$

[P.T.O.]

- (b) Synthesize the network having driving point impedance.

$$Z(S) = \frac{S^4 + 4S^2 + 4}{2S^2 + 3S}$$

Obtain the Second form of Cauer network . (5)

8. What are the properties of Hurwitz Polynomial? Test the following polynomial for Hurwitz Property:

$$P(S) = S^7 + 3S^5 + S^3 + 2S \quad (10)$$

SECTION - E (Compulsory)

9. (a) What is the significance of poles and zeros in driving point impedance?
 (b) What are short circuit impedance parameters?
 (c) What is cut set matrix?
 (d) What do you mean by Tree and graph? Explain with example.
 (e) State Thevenin Theorem.
 (f) Obtain Laplace transform of $\sin 2t$.
 (g) Explain Dot convention in coupled circuits.
 (h) What do you mean by Time constant?
 (i) Write note on Graph theory.
 (j) What are network functions? (10×2=20)

A-02
P-02

EC 303

(88)