Dec.-23-0382

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 Paper consists of Five Sections. Attempt only one question from each section. Section-E is the compulsory section. Attempt all questions of Section-E.

SECTION - A
(Attempt any One)

1. Discuss the analysis of coupled circuits and application of network theorem in AC Circuits.   (10)

2. (a) What is incidence matrix and fundamental cut set matrix? Give suitable example.   (5)

   (b) Discuss the Network equilibrium equations.   (5)

SECTION - B
(Attempt any One)

3. What is Laplace transform in circuit analysis? Discuss in detail.   (10)

4. Write short note on:

   (a) Transient response of R-L, R-C circuits (series combinations only) for DC.

   (b) Laplace transform of basic functions.

   (c) Application and Properties of Laplace Transforms in circuit analysis.   (3+3+4=10)

SECTION - C
(Attempt any One)

5. What is the concept of two port networks? Differentiate between Open circuit and Short circuit parameters.   (10)

6. Discuss the Series, Parallel, Cascade and Series-parallel connections in detail. Give suitable examples.   (10)

SECTION - D
(Attempt any One)

7. Explain the Fundamentals of Network Synthesis in detail. Discuss the concept of poles and zeros.   (10)

8. Discuss the Hurwitz Polynomial and its properties. Explain the properties of positive real functions and testing a positive real function in detail.   (10)

SECTION - E
(Compulsory Section)

9. Attempt all Questions.

   (a) Write short note on Thevenin's Theorem.

   (b) What is Dot convention in coupled circuits?

   (c) What is Superposition theorem?

   (d) Define the term Reciprocity.

   (e) What are the networks with mutual inductance?

   (f) Define the term Duality.

   (g) Write the condition for reciprocity and symmetry.

   (h) What is the meaning of interconnection of two port networks in Series?

   (i) Write short note on L-C driving point functions.

   (j) What is Fundamental tie set matrix and loop currents?
                                                      (10×2=20)