

NETWORK ANALYSIS (Common to EC/TC/EE/IT/BM/ML)

Written by Administrator
Friday, 06 November 2009 14:16 -

Sub Code

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06ES34

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IA Marks

:

25

Hrs/ Week

:

04

Exam Hours

Total Hrs.

Exam Marks

PART – A

UNIT 1:

Basic Concepts: Practical sources, Source transformations, Network reduction using Star – Delta transformation, Loop and node analysis With linearly dependent and independent sources for DC and AC networks, Concepts of super node and super mesh

7 Hours

UNIT 2:

Network Topology: Graph of a network, Concept of tree and co-tree, incidence matrix, tie-set, tie-set and cut-set schedules, Formulation of equilibrium equations in matrix form, Solution of resistive networks, Principle of duality.

7 Hours

UNIT 3:

Network Theorems – 1: Superposition, Reciprocity and Millman's theorems

6 Hours

UNIT 4:

Network Theorems - II:

Thevinin's and Norton's theorems; Maximum Power transfer theorem

6 Hours

PART – B

UNIT 5: Resonant Circuits: Series and parallel resonance, frequency-response of series and Parallel circuits, Q –factor, Bandwidth. □□□□□□□□□□□□□□□□□□
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6Hours

UNIT 6:

Transient behavior and initial conditions: Behavior of circuit elements under switching condition and their Representation, evaluation of initial and final conditions in RL, RC and RLC circuits for AC and DC excitations. □□□□□□□□□□
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7 Hours

UNIT 7:

Laplace Transformation & Applications : Solution of networks, step, ramp and impulse responses, waveform Synthesis□□□□
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7 Hours□□

UNIT 8:

Two port network parameters: Definition of z, y, h and transmission parameters, modeling with these parameters, relationship between parameters sets

6 Hours

TEXT BOOKS:

1. **“Network Analysis”**, M. E. Van Valkenburg, PHI / Pearson Education, 3rd Edition. Reprint 2002.
2. **“Networks and systems”**, Roy Choudhury, 2nd edition, 2006 re-print, New Age International Publications.

REFERENCE BOOKS:

1. , **“Engineering Circuit Analysis”**, Hayt, Kemmerly and DurbinTMH 6th Edition, 2002
2. **“Network analysis and Synthesis”**, Franklin F. Kuo, Wiley

International Edition,

3. **“Analysis of Linear Systems”**, David K. Cheng, Narosa Publishing House, 11th reprint, 2002

4. **“Circuits”**, Bruce Carlson, Thomson Learning, 2000. Reprint 2002

Question Paper Pattern: Student should answer FIVE full questions out of 8 questions to be set each carrying 20 marks, **selecting at least TWO questions from each part**

Coverage in the Texts:

Unit 1: Text 2: 1.6, 2.3, 2.4 (Also refer **R1**:2.4, 4.1 to 4.6; 5.3, 5.6; 10.9 This book gives concepts of super node and super mesh)

Unit 2: Text 2: 3.1 to 3.11

Unit 3 and Unit 4: Text 2 – 7.1 to 7.7

Unit 5: Text 2 – 8.1 to 8.3

Unit 6: Text 1 – Chapter 5;

Unit 7: Text 1 – 7.4 to 7.7; 8.1 to 8.5

Unit 8: Text 1 – 11.1 to 11.6

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