AR13

CODE: 13CE2002 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March-2017

SURVEYING
(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1 a) Define the term True error.
b) What is meant by Check Line?
c) What is meant by Magnetic bearing?
d) Name any two different types of Offsets.
e) What is meant by Line of Collimation?
f) Define temporary adjustment of theodolite
g) Mention any two uses of Contours.
h) What is meant by telescope normal?
i) What is meant by Zero Circle?
j) What is meant by the term Prismoid?

PART-B

Answer One question from each Unit **[5X12=60]**

UNIT-I

2. (a) Explain briefly about the principle of Chain Surveying. **[12M]**
(b) Discuss the advantages and disadvantages of Plane tabling.

(OR)

3. (a). Discuss the factors to be considered in deciding the Stations of a Chain Survey. **[12M]**

(b). Convert the whole circle bearings to quadrantal bearings.
(i). $285^{\circ}30'$
(ii). $160^{\circ}\ 10'$
(iii). $210^{\circ}\ 40'$.

UNIT-II **[12M]**

4. (a) Explain about the temporary adjustments of a Level.
(b) Define the term Contour line and discuss the various Characteristics of Contours.

(OR) **[12M]**

5. (a). Briefly discuss about the effect of curvature and refraction in
(b). Levelling.
Define the term Contour. What do you understand by Contour interval and mention the factors on which it depend.

AR13

CODE: 13OE4001 **SET-1**

UNIT-III

6. (a) Discuss briefly the various temporary adjustments of a theodolite. **[12M]**
   (b) A closed traverse was conducted round an obstacle and the following Observations were made. Work out for the missing quantities.

Side	Length (m)	Azimuth
AB	-------	33˚ 45’
BC	300	86˚ 23’
CD	-------	169˚ 23’
DE	450	243˚ 54’
EA	268	317˚ 30’.

(OR)

7 (a) How would you determine the different constants of a tachometer? **[12M]**
   (b) Discuss about the principles of Electronic Theodolite.

UNIT-IV

8 (a) Discuss the methods related in the computation of areas along irregular boundaries. **[12M]**
   (b) Discuss about the calculation of the capacity of a reservoir by Trapezoidal rule and Prismoidal rule.

(OR)

9 (a) List the general methods of calculating area. **[12M]**
   (b) Explain any one method giving its advantages and disadvantages.

UNIT-V

10 (a) Briefly discuss about Compound curve and Reverse curve **[12M]**
   (b) Discuss the problems in ranging Simple curves and describe the procedure to overcome the same

(OR)

11 (a) Derive an expression for shift and length of a transition curve required for a First Class railway track **[12M]**
   (b) Discuss briefly about the types of Simple and Compound curves

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AR13 **Set 01**

Code: 13EE2004

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March-2017
ELECTRICAL CIRCUIT ANALYSIS-I
(Electrical & Electronics Engineering)

Time: 3 hours **Max. Marks: 70**

PART – A

Answer all Questions **[10X1=10M]**

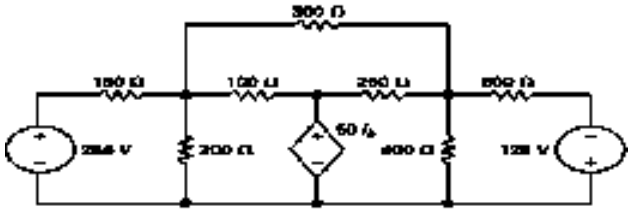
1. a) State the basis for node voltage analysis and mesh current analysis.
   b) Write the expression for delta to star transformation.
   c) Define bandwidth and selectivity.
   d) Name the four different types of dependent sources in electric circuits.
   e) Define cutest.
   f) Define fundamental loop.
   g) State the necessary conditions for superposition theorem.
   h) Limitation of Thevenin's theorem.
   i) Significance of compensation theorem.
   j) Define D-parameter in two port network.

PART – B

Answer one question from each unit **[5 x 12 = 60 M]**

UNIT-I

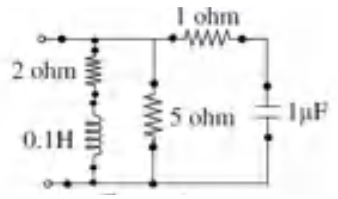
2. Identify the number of nodes in the given network shown in the figure below. Find the voltage of each of the node by nodal analysis.



[12M]

(OR)

3 (a) Find the resonant frequency of the two terminal network shown in Figure. Assume operating frequency of 50 Hz. [6M]

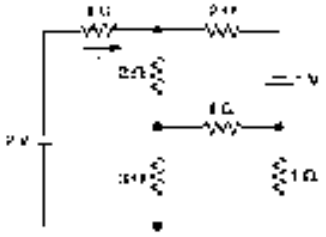


(b) A variable frequency source of V = 200 Volt is applied to a series R-L circuit having R=10Ω and L = 10 mH. Draw Z-locus and I-locus considering sample frequencies ω = 0, 500, 1000, 1500, and 2000 rad/sec.

[6M]

UNIT –II

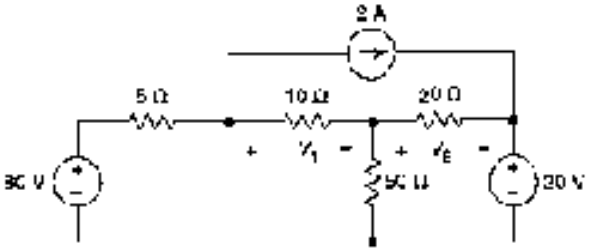
4.(a) Draw the oriented graph and topology of all possible trees, Determine the node to branch reduced order incident matrix. [6M]



(b) Draw the dual of the above circuit? [6M]

(OR)

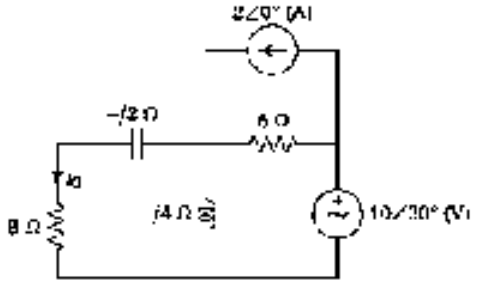
5. For the given network in the figure construct a tree in which 10 Ω and 20 Ω are in tree branches. Using node analysis, solve for V_1 and V_2.



[12M]

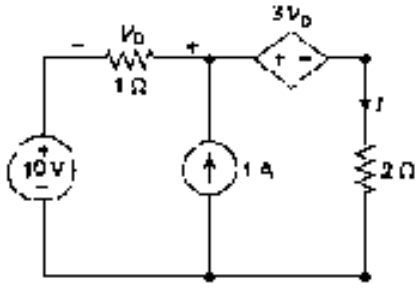
UNIT-III

6. (a) State and prove superposition theorem. [5M]
(b) Find the current i_0 using superposition theorem. [7M]



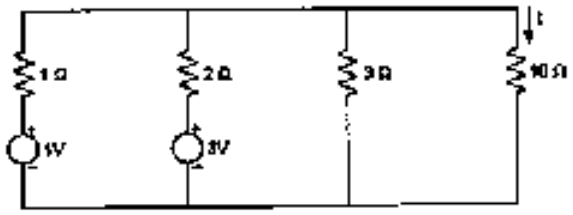
(OR)

7. (a) Define Thevenin's theorem and explain the significance of it. [6M]
(b) Find i in the given figure using Thevenin's theorem. [6M]



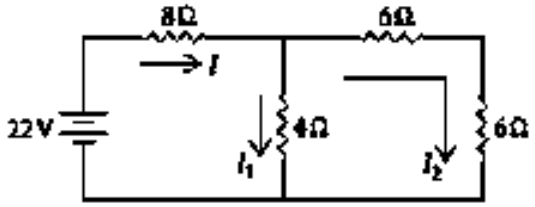
UNIT-IV

8. Calculate the load current *I* in the given circuit by Millman's theorem and draw the reduced equivalent circuit in terms of current source. [12M]



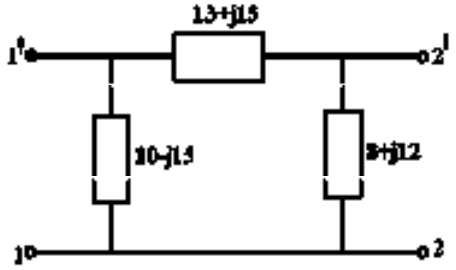
(OR)

9. (a) State and explain compensation theorem. [4M]
   (b) In the given circuit the resistance 4 Ω is changed to 4.5 Ω. Determine the changes in currents of all branches by (i) direct calculation and (ii) using compensation theorem. [8M]



UNIT –V

10. For the two port network given below determine ABCD & hybrid parameters. [12M]



(OR)

11. (a) Derive the expression of admittance parameter in terms of hybrid parameters. [6M]
    (b) Derive expressions for admittance parameters of two two-port networks connected in parallel. [6M]

AR13

CODE: 13ME2005 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March-2017

PROUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) What are basic elements of gating systems in casting?
   b) What are the basics differences between directional and progressive solidification?
   c) What are the types of weld?
   d) Write down a typical application of thermit welding?
   e) Why forming process is suitable for mass production?
   f) What is meant by angle of contact or bite in rolling process?
   g) Write down the various types of forging processes?
   h) Basic difference between the blanking and punching?
   i) Define magnetic pulse forming process?
   j) What is function of plasticizer in plastics processing?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain the need of allowance in casting process and also explain the types of allowances with neat sketch? 8M
   b) Explain the CO_2 moulding process with neat diagram? 4M

(OR)

3. a) Design a gating system with dimension for casting the aluminium cube of 100 mm ×100 mm × 100 mm dimension? 8M
   b) Briefly explain about causes and remedies of four casting defects with neat diagram? 4M

UNIT-II

4. a) Explain about submerged arc welding process with neat diagram and discuss about its process parameters? 6M
   b) Explain in detail about Oxygen-Hydrogen welding process with neat diagram? 6M

(OR)

5. a) Explain laser beam welding process with neat diagram and also discuss about its process parameters? 8M
   b) Briefly explain the following terms : Brazing, braze welding and soldering? 4M

AR13

CODE: 13ME2005 **SET-2**

UNIT-III

6.	a)	Explain the various types of metal working processes with neat diagram?	8M
	b)	Write down the major advantages of forming process compared to other manufacturing process?	4M
		(OR)	
7.	a)	Explain in detail about various rolling stand arrangements with neat diagram?	8M
	b)	Explain the mechanism of rolling process with neat diagram?	4M

UNIT-IV

8.	a)	Explain in detail about various types of major extrusion processes with neat diagram?	8M
	b)	Discuss the hydrostatic extrusion process with neat diagram?	4M
		(OR)	
9.	a)	Explain in detail about die forging and roll forming with neat diagram?	8M
	b)	Describe spring back effect in sheet metal forming with neat diagram and also discuss its importance?	4M

UNIT-V

10.	a)	Explain in detail about Electro hydraulic forming with neat diagram and also discuss its process parameters?	8M
	b)	Bring out the advantages of High velocity forming?	4M
		(OR)	
11.	a)	Explain various processes for fabricating thermoplastic plastics with neat diagram?	6M
	b)	Suggest a suitable process to fabricate PET bottle and explain in detail about the process with neat diagram?	6M

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AR13

CODE: 13EC2004 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March-2017

SIGNALS AND SYSTEMS
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

PART – A

Answer all questions **[10 x1=10M]**

1. a) When is a System said to be memory less? Give Example..
   b) Define Unit impulse and Unit Step Signals.
   c) Prove that $\delta(n) = u(n) - u(n-1)$?
   d) Write the dirichlets conditions for Fourier transform.
   e) Distinguish between energy and power Signals.
   f) What is system bandwidth?
   g) How the aliasing effect is eliminated?
   h) State Convolution property..
   i) State the Region of convergence of the laplace transform..
   j) What is the equation of laplace transform?

PART – B

Answer one question from each unit **[5 x 12=60M]**

UNIT-I

2. a) Explain about complex exponential function and show that the complex exponential functions are orthogonal functions.
   b) Distinguish between the following.
      i. Continuous time signal and discrete time signal
      ii. Unit step and Unit Ramp functions.
      iii. Periodic and Aperiodic Signals.
      iv. Deterministic and Random Signals.. [4M + 8 M]

(OR)

3. a) Define mean square error and derive the equation for evaluating mean square error.
   b) Derive the condition for orthogonality of two signals and also prove that $\sin(n\omega_0 t) and \cos(n\omega_0 t)$ are orthogonal to each other for all integer values of m and n

UNIT-II

4. a) Find the exponential Fourier series of a signal x(t)= cos 5t sin 3t .
   b) State and Prove Convolution property and parseval's relation of Fourier series [7M + 5 M]

(**OR**)

5. a) State and prove the following properties of fourier transform [3 x 2=6M]
   i. Time convolution
   ii.Time Differentiation
   iii.Time reversal
   b) Obtain Fourier series of half wave Rectified Sine wave. [6M]

UNIT-III

6. a)Explain how input,output signals are related to impulse response of LTI System? [6M + 6 M]
   b) Derive the relationship between bandwidth and rise time.

(OR)

7. a) Define signal bandwidth and obtain the conditions for the distortion less transmission through a system. [6M + 6 M]
   b) Explain causality and poly wiener criterion for physical realization.

UNIT-IV

8. a) Prove the sampling theorem and explain how the original signal can be reconstructed from the sampled version. [6M + 6 M]
   b) Explain the steps to Compute convolution of two integrals.

(OR)

9. a) Prove that the auto-correlation function and energy density spectrum form a Fourier transform pair. [6M + 6 M]
   b) State and prove sampling theorem for low pass band limited signal and explain the process of reconstruction of the signal from its samples.

UNIT-V

10. a)State and prove initial value and final value theorem w.r.t laplace transform [6M + 6 M]
    b) State and prove the Convolution Property of Z Transform.

(**OR)**

11. a) State and prove the properties of laplace transforms. [8 M]
    b) Write the properties of ROC of Z transform. [4 M]

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AR13

CODE: 13CS2004 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March-2017

ADVANCED DATA STRUCTURES
(Common to CSE and IT)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define Dictionary
   b) What is hash function?
   c) Define balance factor
   d) What is the difference between AVL Trees and splay trees
   e) Define 2-3 trees
   f) Define shortest path
   g) What is spanning tree
   h) What is the difference between binary search tree and binary heap tree
   i) What is Lazy Binomial Queue
   j) Define Tries

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. What is open addressing? Explain linear probing ,Quadratic probing and double hashing with an example **12M**

(OR)

3. List and explain the different methods for creating Hash functions **12M**

UNIT-II

4. a Create AVL tree from the following lists of data items. **6M**

   30, 20, 35, 95, 15, 60, 55, 25, 5, 65, 70, 10, 40

   b Define AVL tree. Discuss in what way is an AVL tree better than a binary tree. **6M**

(OR)

5. Explain Red- Black tree operations with suitable example **12M**

UNIT-III

6. a Explain Kruskal'sAlgorithm with suitable example **6M**
   b Discuss the operations on graph with suitable example **6M**

(OR)

7. **Discuss about** Dijkstra's Algorithm and warshalls' algorithm with suitable example **12M**

AR13

CODE: 13CS2004 SET-1

UNIT-IV

8.	What is binary heap? Explain the various operations of Binary heap with suitable examples	**12M**

(OR)

9.	What is Binomial queue? Discuss about binomial Queue operations with suitable examples	**12M**

UNIT-V

10.	Discuss the Brute force, the Boyer Moore algorithm pattern matching algorithm with example	**12M**

(OR)

11.	Discuss the following concepts Binary trie, Patricia and Multi-way trie	**12M**

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