AR13   Set 01

Code: 13CE2002

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March, 2015
SURVEYING
(CIVIL ENGINEERING)

Time: 3 hours   Max. Marks: 70

PART – A

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

1. a) What are different types of errors in surveying?
   b) What is reciprocal ranging?
   c) For what types of fields plane table survey is more suitable?
   d) What is meant by contour gradient?
   e) Define precision
   f) Distinguish Map and Plan.
   g) Define terms oblique offset.
   h) What is change point?
   i) Define line of collimation
   j) What are types of curves?

PART – B

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

2. a) What is meant by surveying? Explain the principle of surveying?   [6M]
   b) As a surveyor, what are the different types of instruments you use in the field?
       Give purpose of each instrument?   [6M]

(OR)

3. a) Define the following terms
       (i)Accuracy   (ii) Well-conditioned triangle   (iii)Base line   [6M]
   b)What is magnetic declination? Explain about the variations in magnetic declination.   [6M]

UNIT-II

4. The following consecutive readings were taken with a level and 5m leveling staff on
   continuously sloping ground at a common interval of 20m::
   0.385,1.030,1.925,2.825,3.730,4.685,0.625,2.005,3.110,4.485.The R.L of the first point was
   208.125m.Rule out a page of a level field book and enter the above readings. Calculate the
   R.L s of the points by the rise and fall method and also the gradient of the line joining the first
   and last points.   [12M]

(OR)

5 a) Explain the uses of contour maps.   [6M]
   b) What is a grade contour? How it is located (i) on the ground and (ii) on the map   [6M]

UNIT-III

6 a) Write about the principles of electronic Theodolite. [4M]

   b) Describe the procedure of measuring horizontal angles by Reiteration and Repetition
     methods. [8M]

(OR)

7. a) Define the terms (i) face right and face left observations (ii) swinging the telescope
    (iii) Transiting the telescope [6M]

   b) What are the methods of traversing? Explain the traversing by free needle method [6M]

UNIT-IV

8 List the general methods for calculating areas and explain any two methods giving its
   advantages, limitation and sutability for a given type of work. [12M]

(OR)

9 a).Explain the method to find the volume of barrow pits from spot levels [6M]

   b) The areas enclosed by various contours on upstream side of dam are given below
     Determine
    i) The capacity of reservoir if FSL is 125
    ii) The elevation of water surface when the reservoir is half- full ignore the volume below
     R.L100m [6M]

Contour(m)	100	105	110	115	120	125
Area(ha)	3	8	10	15	20	25

UNIT-V

10 a) Write about types of curves. [6M]

   b).Explain elements of simple curve with neat sketch. [6M]

(OR)

11).List the various methods of setting out a simple curve .Explain briefly the Rankine,s method
    of deflection angles [12M]

Code: 13EE2004
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March, 2015
ELECTRICAL CIRCUIT ANALYSIS-I
(ELECTRICAL & ELECTRONICS ENGINEERING)

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

PART – A
Answer all Questions   **[10X1=10M]**

1. a) What is a principle node?
   b) Write the expression for star to delta transformation.
   c) Define 'Q' factor and selectivity.
   d) Give two applications of both series and parallel combination.
   e) Define tieset.
   f) Define incidence matrix.
   g) What are the limitations of Norton's theorem?
   h) State the condition for maximum power transferred from source to load.
   i) What is the significance of Tellegen's theorem?
   j) Define T-parameter in two port network.
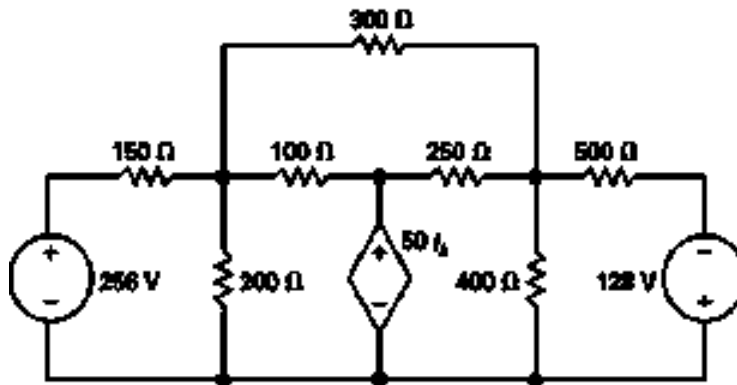

PART – B
Answer one question from each unit   **[5 x 12 = 60 M]**

UNIT –I

2. How many number of meshes are there in the given network shown in the figure below. Find each mesh current by mesh analysis.   [12M]


(OR)

3. A series RLC circuit with $R = 10$, $L = 10$ mH and $C = 1$ μ f has an applied voltage of 200 V at resonance frequency. Calculate the resonant frequency, the current in the circuit and the voltage across the elements at resonance. Find also the quality factor, band width, selectivity and half power frequency for the circuit.   [12M]
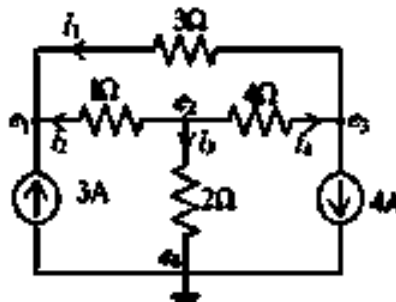
UNIT –II

4. For the given network find out the number of cutset and number of trees, determine the voltage across 4Ω, 5Ω and 6Ω resistor, using cutset analysis. [12M]
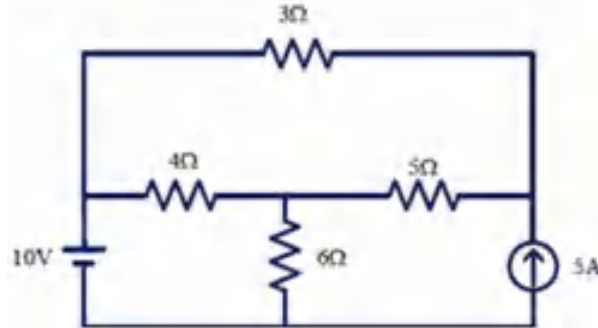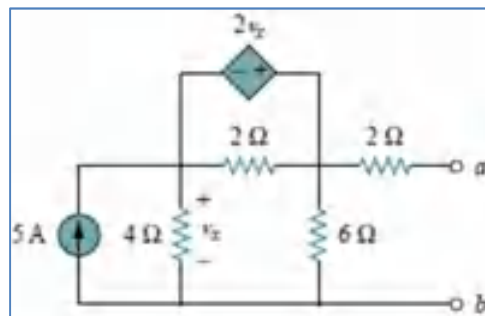

(OR)

5. (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]

UNIT-III

6. (a) Define Norton's theorem [4M]
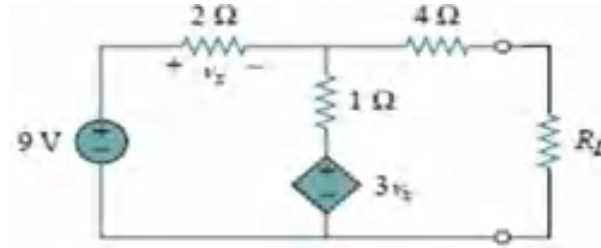   (b) Find the Norton's equivalent of the circuit shown. [8M]

(OR)

7. Verify the reciprocity theorem for the network shown in the figure. [12M]
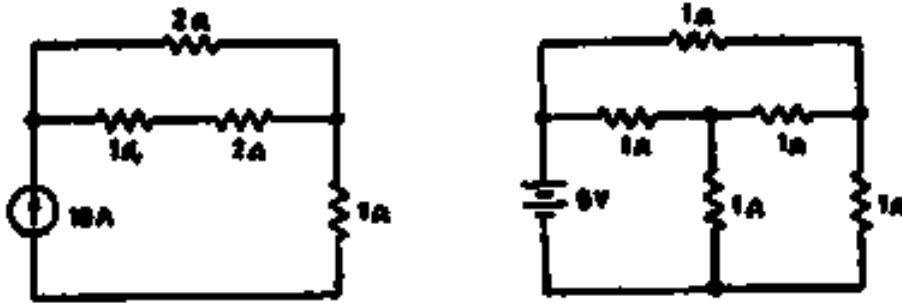

2-3

UNIT-IV

8. (a) Derive the condition for maximum power transfer in a linear bilateral network.   [4M]

(b) Find the value of R_L for maximum power transfer in the circuits. Find the maximum power.   [8M]
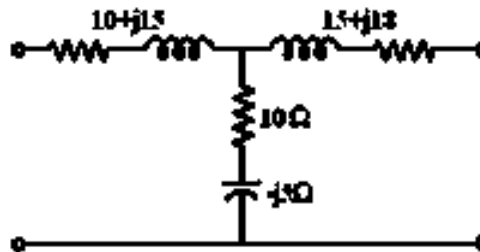

(OR)

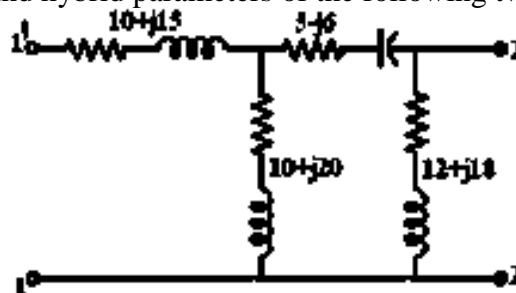9. Verify the Tellegen's theorem for the pair of networks shown in the figure.   [12M]

UNIT –V

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

(OR)

11. Determine Impedance and hybrid parameters of the following two port network.   [12M]

CODE:13ME2005
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March, 2015
PRODUCTION TECHNOLOGY
(MECHANICAL ENGINEERING)

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

PART-A

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

1. a) Why is allowance needed in casting processes?
   b) What is the typical gating ratio of pressurized gating system?
   c) Write down the classification of welding process based on the source of heat?
   d) How to calculate the amount of heat generated at the contact area of the elements to be welded in resistance welding?
   e) Why forming products are having high strength as compared to casting and machining products?
   f) List out types of flames in Oxy-Acetylene Welding?
   g) Bring out the major differences between hot working and cold working process?
   h) Define neutral plane in rolling process?
   i) Compare the thermoplastic and thermosetting plastic?
   j) List out types of high velocity forming processes?

PART – B

Answer one question from each　　　　　　　　　　　　　　**[5 X 12 = 60 M]**
UNIT – I

2. (a) How to cast 150×150×100 mm cuboid by CO_2 moulding process and explain the process steps involved in the casting process?
   (b) Explain the following terms in brief:
   　(i)　Gated pattern
   　(ii)　Draft allowance
   　(iii) Collapsibility

(OR)
3. (a) Define gating system and explain different elements in gating system with the help of a neat sketch?
   (b) Write down causes and remedies of following casting defects:
   　(i)　Blow holes
   　(ii) Cold Shut
   　(iii) Hot tears

UNIT – II

4. (a) Differentiate between rightward and leftward welding techniques?
   (b) Explain about arc blow with neat diagram and provide suggestions to avoid it while doing arc welding of the given work pieces?
   (c) Differentiate between TIG and MIG welding techniques?

(OR)

5. (a) Differentiate between Soldering and Brazing?
   (b) Suggest the remedies to be taken to avoid lamellar tearing and incomplete fusion in welding ?
   (c) Identify and explain the process to join cylindrical bars?

UNIT – III

6. (a) Explain rolling process mechanism with neat diagram?
   (b) What are types of different rolling stand arrangements and explain with neat sketches?

(OR)

7. (a) What is recrystallization temperature? Differentiate between hot working and cold working operations?
   (b) Explain various defects and its remedies in rolling process?

UNIT – IV

8. (a) Distinguish between forward extrusion and backward extrusion process?
   (b) Identify and explain the process to produce 10 mm diameter stainless steel wire with neat diagram?

(OR)

9. (a) Explain open die and closed die forging operation with neat diagram?
   (b) Explain the following terms briefly:
      (i)   Spring back effect
      (ii) Coining
      (iii) Spinning

UNIT- V

10. (a) Explain explosive forming with neat diagram?
    (b) What are various advantages of forming process over other processes?

(OR)

11. (a) Identify the process to produce PET bottle and explain it with nea diagram?
    (b) What are the additives and fillers used to modified the properties of plastics?

Code: 13EC2004
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech I Semester Supplementary Examinations, March, 2015
SIGNALS & SYSTEMS
(Electronics and Communication Engineering)

Time: 3 hours   **Max. Marks: 70**
PART – A
Answer all Questions   **[10X1=10M]**

1. a) Give the relationship between unit step and ramp functions.
    b) Distinguish between the expression form of Fourier series and Fourier transform.
    c) What is the Fourier transform of a signum function?
    d) Define Nyquist rate?
    e) Define causality of LTI system?
` f) Give the relation between power spectral density and Auto correlation?
    g) Write the relation between correlation and convolution?
    h) Sketch the characteristics of Band stop filter?
    i) What is the ROC of an infinite duration two-sided sequence?
    j) When does the Laplace transform of a function exist?

PART – B
Answer one question from each unit   **[5 X 12 = 60]**

UNIT – I

2. a) Define and sketch the following elementary signals (i) Signum function (ii) Triangular
       function and (iii) Sinc function   **[6M]**

    b) Determine whether the signals (i) $\cos t + \sin \sqrt{2}t$ and (ii) **cos100 t + sin50 t** are periodic or
       not? If periodic determine fundamental period?   **[6M]**
(OR)

3. a)   Show that the signals $x_1(t) = 2$ and $x_2(t) = \sqrt{3}(1-2t)$ are orthogonal over an
       interval [0,1]   **[6M]**
    b)   A triangular pulse signal x(t) is shown in figure. Sketch the following signals (i) x(3t),
       (ii) x(3t+2)and (iii) x(2(t-2)) derived from x(t).   **[6M]**
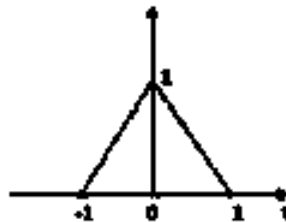
UNIT – II

4.   State and prove the following properties of Fourier series   **[12M]**

      (i)   Frequency Shift property
      (ii)   Time differentiation property
      (iii)   Multiplication property

(OR)

5.   Obtain the trigonometric Fourier series for the waveform shown in figure   [12M]
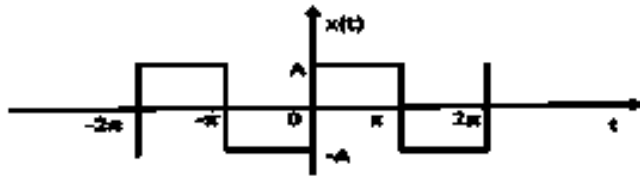

UNIT –III

6   a)   Consider a causal LTI system with frequency response $H(\check{S}) = \dfrac{1}{4 + j\check{S}}$.   For a

particular   input   x(t),   the   system   is   observed   to   produce   the   output

$y(t) = e^{-2t}u(t) - e^{-4t}u(t)$. Find the input x(t)?   [8M]

   b)   What are the properties of LTI system?   [4M]

(OR)

7.   What is distortionless transmission? What is the transfer function of the ideal channel that
   can provide distortion less transmission?   [12M]

UNIT –IV

8   a)   A filter has an input $x(t) = e^{-t}u(t)$ and its impulse response $h(t) = e^{-3t}u(t)$.   Find
   the energy spectral density of the output.   [8M]

   b)   The given figure shows the PSD of the signal x(t). Find out its average power.   [4M]
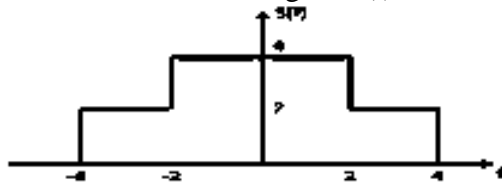
(OR)

9   Determine the Nyquist rate and Nyquist interval for (i) x(t) = 2sinc(100 t),

   (ii) $x(t) = \dfrac{1}{2}\sin c(100f\,t) + \dfrac{1}{3}\sin c(50f\,t)$

   (iii) $x(t) = \sin c(80f\,t)\sin c(120f\,t)$ [12M]

UNIT –V

10   a)   Find the Laplace transform of the signal $x(t) = t\,e^{-2t}\sin 2t\,u(t)$ using the
   properties of Laplace transform   [8M]

   b)   Write the properties of ROC for Laplace transform.   [4M]

(OR)

11   a)   Determine the Z-transform and ROC of the signal $x(n) = \left(\dfrac{1}{2}\right)^{n}\{u(n) - u(n-10)\}$ [6M]

   b)   A left shifted sequence x(n) has Z-transform given by $X(z) = \dfrac{1}{(1 - 0.5z^{-1})(1 - z^{-1})}$.

   Determine x(n) using partial fractions method   [6M]

AR13　Set 02

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

PART – A

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

1. a) Define balance factor?
   b) What are the various ways to implement structure of priority?
   c) What is a hash function?
   d) What are hashing methods?
   e) What is an AVL tree?
   f) What is a red-black tree?
   g) What is a priority queue?
   h) What is Universal hashing?
   i) Define max-heap.
   j) What is DFS.

PART-B

Answer one question from each unit　　　　　　　**[5X12=60M]**

UNIT-I

2. (a) What are skip lists? Discuss insertion, deletion and searching in skip lists with
       examples.　　　　　　　　　　　　　　　　　　　　　　　[6M]
   (b) What is hashing? What is hash function? Describe linear probing and Quadratic probing
       with examples.　　　　　　　　　　　　　　　　　　　　[6M]

(OR)

3. (a) Define sets and Dictionaries. Write down operations on sets and dictionaries.　　[6M]
   (b) Discuss various closed hashing and open hashing techniques with an example.　　[6M]
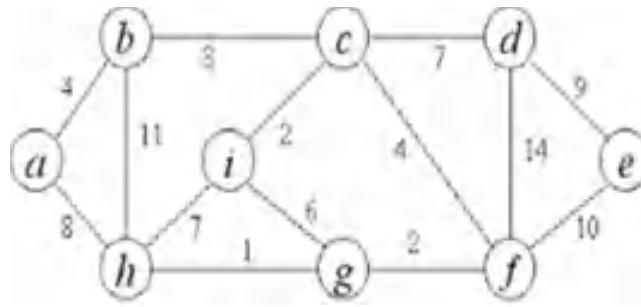
UNIT-II

4. Explain splay tree operation with suitable example.　　　　　　　　　　　[12M]

(OR)

5. (a) Create a 2-3-4 tree from the following list of data items.　　　　　　　　[6M]
       40, 30, 10, 20, 15, 65, 90, 10 ,5, 45, 24, 50, 25, 1
   (b) Discuss insertion and deletion in an AVL tree with a suitable example.　　　[6M]

UNIT-III

6. a) Write down the operations on graphs with suitable examples.　　　　　　　[6M]
   b) Explain Kruskal's algorithm. Find out minimum spanning tree for the following graph.
   　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[6M]

(OR)

7. a) Write depth first search algorithm. [6M]
   b) What is all-pairs shortest path problem? Explain Floyd algorithm. [6M]

UNIT-IV

8. (a) Create a min-heap for the following list. [6M]
   80, 75, 60, 20, 56, 70, 75, 30, 15, 10
   (b) What is binomial queue? Write down binomial amortized analysis. [6M]

(OR)

9. (a) Explain briefly binomial queue operations. [6M]
   (b) What is priority queue? How can it be represented by a multi-queue? [6M]

UNIT-V

10. Analyze brute force pattern matching algorithm with an example. [12M]
    (OR)
11. (a) What is a digital search tree? What is a binary trie? Construct a binary trie. [6M]
    (b) What is a multi-way trie and what is it used for? Construct a patricia trie. [6M]