AR13

CODE: 13CE2002 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B. Tech I Semester Regular / Supplementary Examinations, November-2016
SURVEYING
(CIVIL ENGINEERING)

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

PART-A

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

1 a) Define the term Magnetic declination.
b) What is meant by local attraction?
c) What is meant by Line of Sight?
d) Define the term Dip of horizon.
e) What is meant by Reduced level?
f) Define the term Grade Countor.
g) Mention any two different errors in theodolite work.
h) Define the term Simpsons rule.
i) What is meant by compound curve?
j) What is meant by simple curve?

PART-B

ANSWER ALL THE QUESTIONS **[5X12=60]**

UNIT-I

2 a) Define the term offset? Mention the different types of offsets? Explain about Swing offsets. **[12M]**
b) Discuss the various sources of errors in Plane Table Surveying

(OR)

3 a) Differentiate between Surveyor's Compass and Prismatic Compass. **[12M]**

b) The following fore bearings and back bearings were observed in traversing with a compass in a place where local attraction was suspected:

Line	FB	BB
AB	38˚ 30'	219˚ 15'
BC	100˚ 45'	278˚ 30'
CD	25˚ 45'	207˚ 15'
DE	325˚ 15'	145˚ 15'

Find the corrected fore bearings and back bearings and the True bearings of each line given that the magnetic declination was 20˚ W.

UNIT-II

4 a) Explain about any one temporary and permanent adjustment of a level **[12M]**
b) Explain indirect methods of contouring along with diagram

(OR)

5 a) Discuss about Barometric as well as Spirit levelling. **[12M]**
b) Write a note on the characteristics and uses of Contour.

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UNIT-III

6. a) Discuss briefly the various temporary adjustments of a theodolite. **[12M]**
   b) Explain the tangential method of Tachometry.

(OR)

7. The details of a part of a theodolite traverse survey are as under: **[12M]**

Line	Length (m)	Bearing
AB	200	300˚ 20’
BC	500	25˚ 30’
CD	300	145˚ 30’

Calculate the distance between a point P on AB from A and a point Q on CD 250m from C and also determine the bearing of line PQ.

UNIT-IV

8. a) A series of offsets were taken from a chain line to a curved boundary line at intervals of 10m in the following order **[12M]**

0, 2.65, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85 meters.

Calculate the area between the chain line, the curved boundary and the end offsets by Simpson’s one third rule.

   b) Write the procedure to calculate the capacity of a Reservoir.

(OR)

9. a) Write a note on Trapezoidal rule and Simpson’s rule. **[12M]**
   b) Discuss upon the computation of areas along irregular boundaries.

UNIT-V

10. a) Describe the method of setting out a simple circular curve by offset from chords produced. **[12M]**
    b) What is meant by Degree of a curve? Derive its relationship with radius of a curve.

(OR)

11. a) Differentiate between Simple curves and Compound curves. **[12M]**
    b) The two straights intersect at chain age 950 m . If the angle of intersection is 75˚ and the radius of curve is 400m. Find (i). Length of curve and (ii). Degree of curve.

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Code: 13EE2004 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY & MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B. Tech I Semester Regular / Supplementary Examinations, November-2016
ELECTRICAL CIRCUIT ANALYSIS-I
(Electrical & Electronics Engineering)

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

PART-A

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

1.
(a) Define KVL.
(b) Plot Impedance versus frequency curve in a series RLC circuit.
(c) Define 'Tree' of a graph.
(d) State the difference between dependent & independent sources.
(e) Mention the technique employed to get Norton's equivalent circuit from Thevenin's equivalent circuit.
(f) State super position theorem.
(g) Mention any one limitation of maximum power transfer theorem.
(h) State the conditions to be satisfied by a network for applying Milliman's theorem.
(i) What is the condition interms of Y-parameters for a network to be reciprocal?
(j) Express terminal voltages interms of terminal currents in a two port network.

PART-B

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

UNIT-I

2. (a) Determine node voltages V_1 & V_2 in the circuit shown in fig. 2(a). All resistances are in ohm (Ω). (6M)

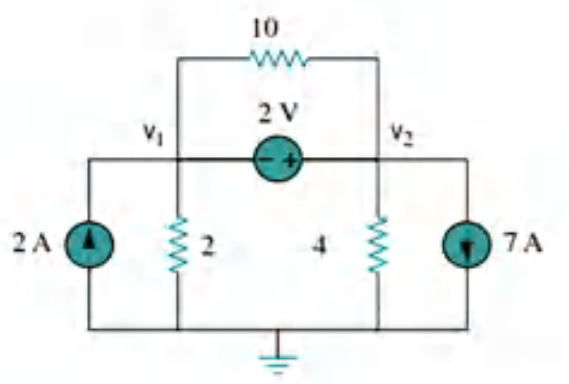

Fig. 2(a)

(b)Determine the current supplied by the source for the circuit shown in fig 2(b) excited by 100 V voltage source. All resistances are in ohm (Ω). (6M)

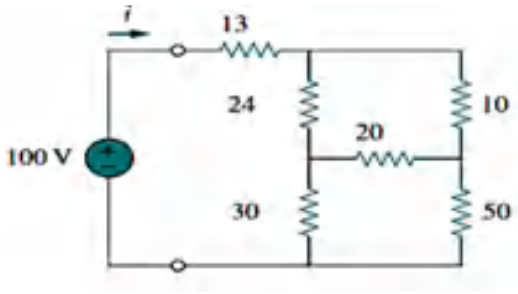

Fig. 2(b)

(OR)

3. (a) Determine the resonant frequency of the network shown in fig. 3(a). All resistances are in ohm (Ω). (6M)

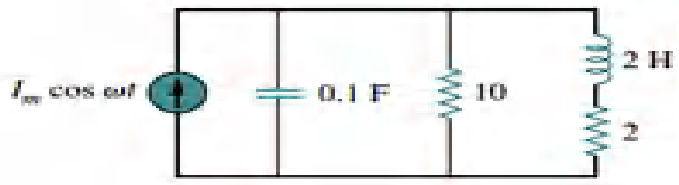

Fig. 3(a)

(b) Determine V_1 & V_2 in the circuit shown in fig. 3(b) using mesh analysis. All impedances are in ohm (Ω). (6M)

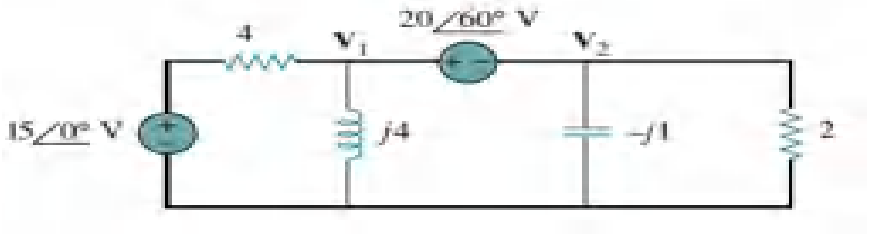

Fig. 3(b)

UNIT-II

4. Using Loop method of analysis of circuit, determine current i_o in the circuit shown in fig. 4. All resistances are in ohm(Ω). (12M)

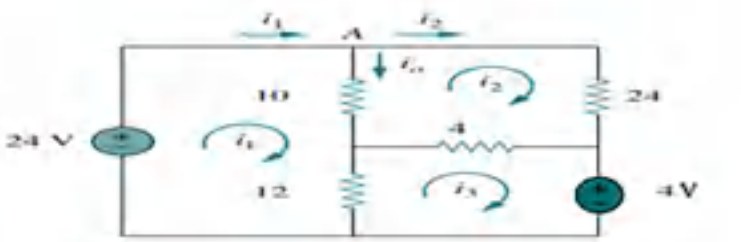

Fig. 4

(OR)

5. (a) Draw the dual circuit of the circuit shown in fig. 5(a) (6M)

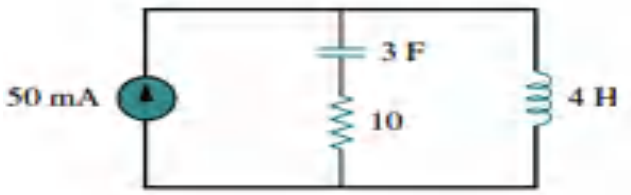

Fig. 5(a)

(b) Develop tieset & cutset matrix for the graph shown in fig. 5(b) (6M)

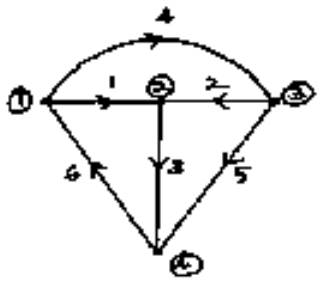

Fig. 5(b)

UNIT-III

6. (a) Determine Thevenin's equivalent circuit for the circuit shown in fig. 6(a) as seen between the terminals a & b. All resistances are in ohm(Ω). (6M)

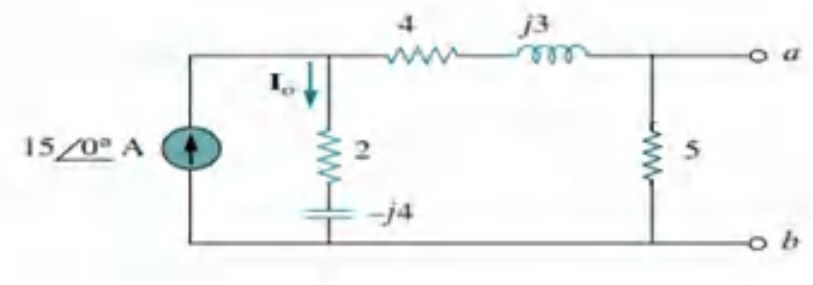

Fig. 6(a)

(b) Determine V_x in the circuit shown in fig. 6(b) using super position theorem. All resistances are in ohm (Ω). (6M)

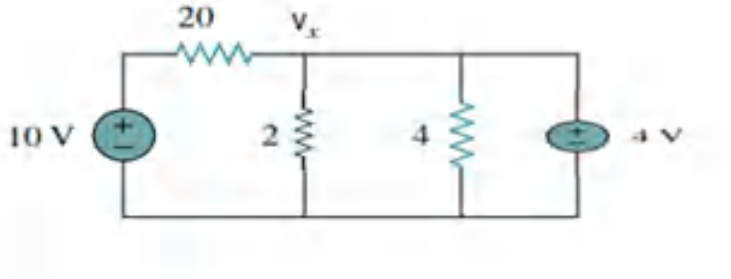

Fig 6(b)

(OR)

7. Obtain I_o in the circuit shown in fig. 7 using Norton's theorem. All resistances are in Ω. (12M)

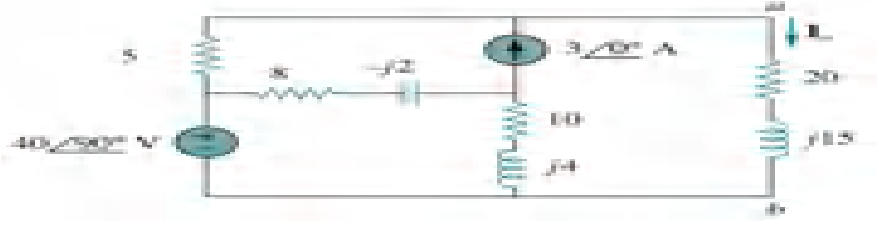

Fig. 7

UNIT-IV

8. Determine the value of R_L that draws maximum power from the rest of the circuit in fig. 8. Calculate maximum power. All resistances are in ohm (Ω). (12M)

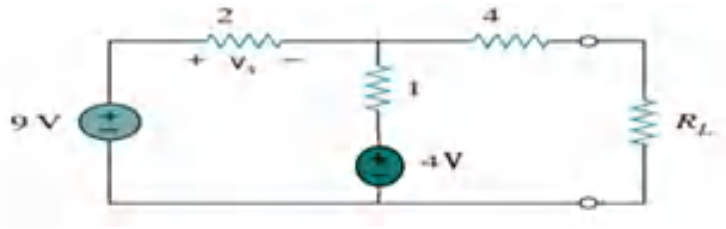

Fig. 8

(OR)

9. (a) State & explain Tellegan's theorem. (6M)

   (b) Find load current I using Milliman's theorem in circuit shown in fig. 9 (6M)

Fig. 9

UNIT-V

10. (a) Determine Y-parameters for the network shown in fig. 10(a). (6M)

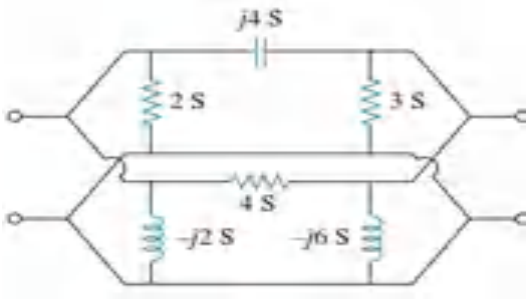

Fig. 10(a)

(b) Determine h-parameters for the network shown in fig. 10(b). All resistances are in ohm(Ω). (6M)

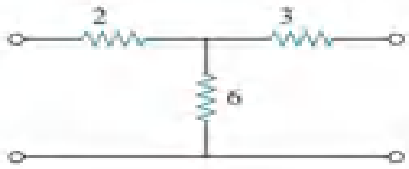

Fig. 10(b)

(OR)

11. Obtain Y parameters for the network shown in fig. 11. All resistances are in ohm (Ω). (12M)

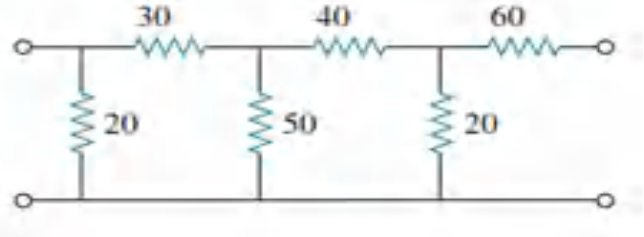

Fig. 11

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Code: 13ME2005 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B. Tech I Semester Regular / Supplementary Examinations, November-2016

PRODUCTION TECHNOLOGY

(Mechanical Engineering)

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

PART-A

Answer all questions **[10 x 1 = 10 M]**

1. a) What is a core?
   b) What do you mean by gating ratio?
   c) Distinguish between DCSP and DCRP?
   d) Name the three flames used in oxy acetylene welding?
   e) What is the angle of bite in rolling?
   f) What is meaning of press tonnage?
   g) What is the material used to manufacture the dies of wire drawing operation?
   h) Do you require a punch in explosive forming?
   i) What is the ideal shape of a riser?
   j) What type of welding is being used to fabricate a car body?

PART – B

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

UNIT – I

2. (a) Explain various pattern allowances?
   (b) Explain the working of jolt-squeeze molding machine.

(OR)

3. (a) Draw the cross section of cupola and indicate various zones?
   (b) Discuss six casting defects.

UNIT – II

4. (a) Explain sub-merged arc welding with neat sketch?
   (b) Write about types of welding joints

(OR)

5. Explain following welding processes
   (a) Friction welding
   (b) Laser beam welding

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Code: 13ME2005 **SET-2**

UNIT – III

6. (a) Define Rolling process and explain merits and demerits of the same
   (b) Explain different rolling stand arrangements with neat sketches.

(OR)

7. (a) What is recrystalisation temperature? Differentiate between hot working and cold working operations?
   (b) Explain the process of producing sheet metal out of slabs using rolling process with neat sketches.

UNIT – IV

8. (a) With the help of sketches explain the process of producing connecting rod of an IC engine.
   (b) Distinguish between tube drawing and wire drawing.

(OR)

9. (a) Describe the process of bending. What allowances must be taken into account while doing this process?
   (b) Briefly explain about blanking, spinning and coining operations.

UNIT- V

10. (a) Explain explosive forming with neat sketch?
    (b) Describe magnetic pulse forming with neat sketch.

(OR)

11. (a) What are the merits and demerits of plastics as engineering materials? Discuss.
    (b)With a neat sketch explain compression molding of plastics.

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AR13 **Set 01**

Code: 13EC2004

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B. Tech I Semester Regular / Supplementary Examinations, November-2016
SIGNALS & SYSTEMS
(Electronics and Communication Engineering)

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

PART – A

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

1. (a) $x(t) = u(t+2) - u(t-2)$. Is this signal causal or non-causal?
   (b) Define Orthogonal vector space.
   (c) State the Dirichlet's conditions of Fouries series.
   (d) State the Time shifting property of Fourier transform.
   (e) Draw the Ideal characteristics of an Ideal LPF.
   (f) Define an LTI system.
   (g) Define Auto correlation and Cross correlation of signals.
   (h) Draw the Sampled frequency spectrum that effected by Aliasing.
   (i) Define Poles and Zeros of a system function $H(S)$.
   (j) Mention the Laplace transform and ROC of a signal $e^{-at}u(t)$.

PART – B

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

UNIT – I

2. A rectangular function is defined as $f(t) = \begin{cases} A & 0 < t < \frac{\Pi}{2} \\ -A & \frac{\Pi}{2} < t < \frac{3\Pi}{2} \\ A & \frac{3\Pi}{2} < t < 2\Pi \end{cases}$

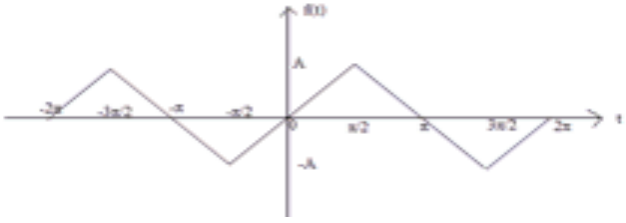
   Approximate the above function by $Acos(t)$ between the intervals (0,2π) such that the mean square error is minimum. [12M]

(OR)

3. (a) Determine whether each of the following sequences are periodic or not. If periodic determine the fundamental period. 1) $x_1(n) = \sin(6\pi n/7)$ *ii)* $x_2(n) = \sin(n/8)$ [6M]
   (b) Define and Sketch the i) Impulse train ii) Ramp function iii) Signum function. [6M]

UNIT-II

4. Consider a periodic function f(t) is shown in figure. Obtain Trigonometric Fourier series representation for it. Also plot it's frequency spectrum. [12M]



(OR)

5. (a) Find the Fourier Transform of $sgn(t)$ function. [6M]
   (b) State and prove following properties of Fourier transform
   i) Linearity ii) Convolution in time domain [6M]

UNIT-III

6. (a) Sketch and explain the frequency response characteristics of ideal LPF, HPF, BPF and BRF. [6M]
   (b) Explain (i) Impulse Response and (ii) Transfer Function, related to Linear systems. [6M]

(OR)

7. (a) Explain causality and physical reliability of a system and hence give paley-wiener criterion**.** [6M]
   (b) Explain the representation of CT signals interms of Impulses i.e. Convolution Integral. [6M]

UNIT-IV

8. State and prove Impulse train Sampling with relevant diagrams. [12M]

(OR)

9. Find the Convolution of the following signals

$i)\ x_1(t) = 1 \quad 0 \le t \le 2$
$\quad = 0 \quad$ *other wise*
$ii)\ x_2(t) = 1 \quad 1 \le t \le 5$
$\quad = 0 \quad$ *other wise*

. 12M]

UNIT-V

10. (a) Determine the Z Transform and it's ROC of the following sequence. $x(n) = \cos(\omega n)u(n)$. [8M]
    (b) Bring out the relations between LT and FT. [4M]

(OR)

11. (a) State and prove Time shifting and Convolution properties of Laplace Transform. [8M]
    (b) Find the Laplace Transform of $x(t) = te^{-at}u(t)$, using properties of LT. [4M]

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CODE: 13CS2004 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B. Tech I Semester Regular / Supplementary Examinations, November-2016

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 Hash Table ?
   b) What is skip List?
   c) What is Maximum Height of an AVL Tree?
   d) Define 2-3-4 Trees?
   e) Define Graph?
   f) What are the graph traversal techniques?
   g) What is All-pairs shortest path problem?
   h) Define max-heap?
   i) What is pattern matching?
   j) Define binary trie?

PART-B

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

UNIT-I

2.	a	What is hashing? What is hash function? What are the characteristics of a good hash function?	**6M**
	b	What are the collision resolution techniques? Explain Closed Hashing with suitable example	**6M**
		(OR)	
3.		What is skip list? Illustrate insertion and deletion operation and analysis of Skip List with suitable example	**12M**

UNIT-II

4.	a	Create 2-3 tree from the following lists of data items. 30, 20, 35, 95, 15, 60, 55, 25, 5, 65, 70, 10, 40	**6M**
	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 the prim's algorithm with suitable example	**6M**
	b	Discuss about Dijkstra's Algorithm with an example	**6M**
		(OR)	
7.		What is All-pairs shortest path problem? Explain Floyd's and Warshall's algorithms with an example	**12M**

UNIT-IV

8.	a	What is priority queue? How can it be represented by a Heap?	**6M**
	b	What is Binomial queue? Discuss about binomial amortized analysis	**6M**
		(OR)	
9.	a	What is Binomial queue? Discuss about lazy binomial queues	**6M**
	b	Create a max-heap for the following list 20, 10, 1, 5, 4, 80, 60, 30	**6M**

UNIT-V

10.		Discuss the KMP pattern matching algorithm with example	**12M**
		(OR)	
11.	a	Discuss the Boyer-Moore algorithm with example	**6M**
	b	What is multi-way trie? What for it is used? Construct a muti-way trie	**6M**

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