

AR16

CODE: 16EE1004

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I B.Tech. II Semester Supplementary Examinations, August-2018

Basic Electrical & Electronics Engineering

(Common to CE & ME branches)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) State Kirchhoff's laws and Ohms law. And mention Ohms law limitations. 7M
- b) Derive the expressions for converting a Star network to a Delta network. 7M

(OR)

2. a) Define current, voltage, power and resistance. 7M
- b) Three resistances r , $2r$, $3r$ are connected in Delta. Determine the resistances for an equivalent Star connection. 7M

UNIT-II

3. a) Explain the construction, principle and operation of D.C. generator with neat diagram. 7M
- b) A 30KW, 300V D.C shunt generator has armature and field resistances of 0.05 ohm and 100 ohm respectively. Calculate the total power delivered by the armature when it delivers full load output. 7M

(OR)

4. a) What is necessity of 3-point starter ? and Derive the Torque equations of D.C Motor. 8M
- b) A 4-pole motor is fed at 440 V and takes an armature current of 50A. The resistance of the armature circuit is 0.28 ohms. The armature is wave-wound with 888 conductors and the useful flux per pole is 0.023Wb. Calculate the speed. 6M

UNIT-III

5. a) Determine the equivalent circuit diagram parameters of 1- 8M
phase transformers by the use of O.C. and S.C. tests.
b) Derive the power and torque equations of 3-phase 6M
Induction motor.

(OR)

6. a) Describe the operation 3-phase induction motors and 8M
explain its torque – slip characteristics.
b) A single phase 50Hz transformer has 80 turns on the 6M
primary winding and 280 turns on the secondary winding.
The voltage across the primary winding is 240 V at 50
Hz. Calculate i) the maximum flux density in the core
and ii) induced e.m.f. in the secondary. the net cross
sectional area of the core be taken 200 cm^2 .

UNIT-IV

7. a) Explain the principle operation of permanent magnet 8M
moving coil instrument with neat diagram. Compare MC
and MI instruments.
b) Explain the procedure to find the regulation of alternator 6M
by synchronous impedance method.

(OR)

8. a) Derive an E.M.F. equations of alternator. 8M
b) What are the differences between salient pole and non- 6M
salient pole alternator?

UNIT-V

9. a) Explain the working and operation of half wave rectifier 8M
and draw the output wave forms.
b) Compare CB, CE and CC configurations. 6M

(OR)

10. a) Explain the V-I characteristics of P-N junction diode and 6M
its applications.
b) Explain the operation of NPN and PNP transistor. 8M

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SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I B.Tech. II Semester Supplementary Examinations, August-2018

**Engineering Drawing
(Common for EEE & ECE Branches)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

Assume missing dimension suitably. If any

UNIT-I

1. The area of a field is 50,000 sq m. The length and the breadth of the field, on the map is 10 cm and 8 cm respectively. Construct a diagonal scale which can read upto one metre. Mark the length of 235 metre on the scale. What is the R.F. of the scale? 14M
(OR)
2. Construct a parabola, when the distance of the Focus from the directrix is 50 mm. Also draw a tangent and normal at any point on the curve. 14M

UNIT-II

3. a) A point A situated 30mm above the H.P. and 25mm in front of the V.P., Draw its projections? 4M
b) A line PQ, 90 mm long, is in the H.P. and makes an angle of 30° with the V.P. Its end P is 25 mm in front of the V.P. Draw its projections. 10M
(OR)
4. A 90 mm long line is parallel to and 25 mm in front of the VP. Its one end is in the HP. While the other is 50 mm above the HP. Draw its projections and find its inclination with the HP 14M

UNIT-III

5. a) A regular pentagon of 25 mm side has one side on the ground. Its plane is inclined at 45° to the H.P and perpendicular to the V.P. Draw its projections. 10M
b) A square ABCD of 40 mm side has a corner on the H.P. and 20 mm in front of the V.P. All the sides of the square are equally inclined to the H.P. and parallel to the V.P. Draw its projections. 4M
(OR)
6. A square ABCD of 50 mm side has its corner A in the H.P., its diagonal AC inclined at 30° to the H.P. and the diagonal BD inclined at 45° to the V.P. and parallel to the H.P. Draw its projections. 14M

UNIT-IV

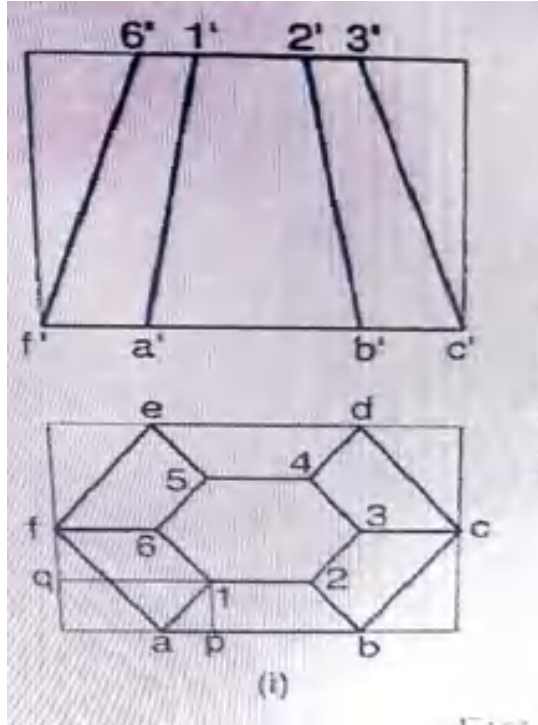
7. a) A cube of 50 mm long edges are resting on the H.P. with its vertical faces equally inclined to the V.P. Draw its projections. 4M
b) A hexagonal prism, base 40 mm side and height 40 mm has a hole of 40 mm diameter drilled centrally through its ends. Draw its projections when it is resting on one of its corners on the H.P. with its axis inclined at 60° to the H.P. and two of its faces parallel to the V. P. 10M

(OR)

8. Draw the projections of a cylinder, base 30 mm diameter and axis 40 mm long, resting with a point of its base circle on HP, such that the axis is making an angle of 30° with HP and parallel to VP. 14M

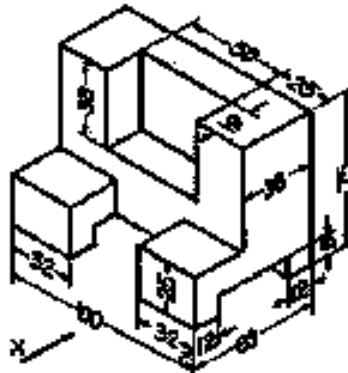
UNIT-V

9. Draw the isometric view of the frustum of the hexagonal pyramid shown in fig. below. The side of big and small hexagons are 50mm and 25mm and height is 50mm. 14M



(OR)

10. Draw the following views of the object shown in fig. below. Draw (i) Front view. (ii) Top view. (iii) Side view from the right. 14M



AR16

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SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I B.Tech. II Semester Supplementary Examinations, August-2018

**Data Structures
(Common to CSE, IT Branches)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) What is data structure? Differentiate between linear and non-linear data structure. 7M
List out the operations that can be performed on it.
- b) Discuss about time and space complexity of an algorithm with suitable example. 7M

(OR)

2. a) What is recursion? Differentiate between linear and binary recursion. 7M
- b) Define abstract data type. List out its advantages. 7M

UNIT-II

3. a) Explain insertion sort with an example. 7M
- b) Explain how the element 90 can be searched from the given list of elements using linear search: 7M
50, 20, 30, 10, 40, 80, 100, 90

(OR)

4. a) Sort the following list of elements using merge sort: 7M
65, 43, 89, 21, 45, 32, 23, 98, 45, 20, 10
- b) Explain the procedure for binary search. 7M

UNIT-III

5. a) Convert the given infix expression $((a+b*c)/d)-e$ to postfix expression using stack. 7M
- b) How a queue can be represented? Explain with example. 7M

(OR)

6. a) Write the algorithm for checking balanced parenthesis in an expression using stack. 7M
- b) Explain the insertion and deletion operation in a circular queue. 7M

UNIT-IV

7. a) Write an algorithm to represent a stack using linked list. 7M
- b) Write the routine for insertion operation of singly linked list. 7M

(OR)

8. a) Write an algorithm to insert an element at a particular position of a circular linked list. 7M
- b) Discuss how to delete an element at a particular position in a double linked list. 7M

UNIT-V

9. a) Write an algorithm to insert an element into a binary search tree. 7M
- b) Explain the DFS technique to traverse a graph with an example. 7M

(OR)

10. a) Explain the insertion and deletion operation in a binary tree with an example. 7M
- b) Define a graph. How it is different from tree? Explain the adjacent matrix representation of directed and undirected graph with suitable example. 7M

AR13

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SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I B.Tech. II Semester Supplementary Examinations, August-2018

**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CIVIL & MECH)**

Time – 3 hours

Max. Marks: 70

PART – A

Answer all questions

[10 x 1 = 10M]

1. a) State Kirchhoff's Voltage Law
b) Define Ohm's Law.
c) What is the use of commutator and brush in a d.c machine?
d) Write down the emf equation for d.c.generator
e) Does transformer draw any current when secondary is open? Why?
f) State two types of induction motors
g) What are the applications of MI instruments
h) What is the main difference between MI &MC type instruments
i) What is rectifier?
j) Draw the V-I Characteristics of a diode

PART-B

Answer one question from each unit

[5 x12 =60 M]

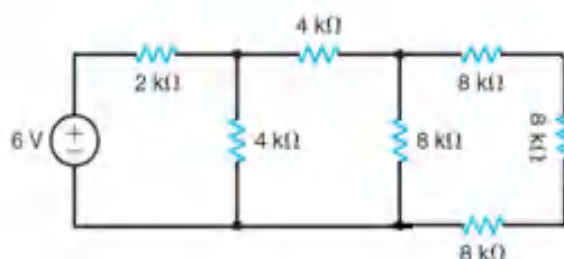
UNIT-1

2. a) State and explain Kirchhoff's laws
b) Find I for given circuit

[6M+6M]

(OR)

3. a) Discuss about voltage and current division principles.
b) Find total current and power in a given circuit



[6M+6M]

AR13

Code: 13EE1002

SET-1

UNIT-II

4. a) Make use of Faraday's law derive the equation for the EMF induced in a DC Machine.
b) An 8 pole DC generator has per pole flux of 40mWb and winding is connected in lap with 960 conductors. Calculate the generated EMF on open circuit when it runs at 400 rpm. [6M+6M]

(OR)

5. a) Explain function of no volt coil and over load release of a 3point starter used in DC Motor with neat diagram.
b) Explain the various losses taking place in DC machines. With the help of these losses draw the power flow diagram for a DC Motor. [6M+6M]

UNIT-III

6. a) A 50 KVA transformer has 800 turns on the primary and 100 turns on the secondary winding. The primary is connected to 4000 V, 50 Hz supply.
Analyze: i) Full load primary current ii) The induced voltage in the secondary winding iii) Max Flux
b) Explain working principle of 3-phase induction motor. [6M+6M]

(OR)

7. a) Describe the tests to be performed on a single phase transformer to determine the equivalent circuit parameters.
b) Derive EMF equation of 3-phase alternator. [6M+6M]

UNIT-IV

8. Explain different types of moving iron instruments

(OR)

9. Principle operation of PMMC instrument [12M]

UNIT-V

10. Describe the working of a PN junction diode with neat diagrams. Also explain its V-I characteristics.

(OR)

11. Explain the operation of centre tapped full wave rectifier with neat diagram. [12M]

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SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
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I B.Tech. II Semester Supplementary Examinations, August-2018

ENGINEERING DRAWING

(Common to EEE & ECE)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Define R.F.
b) Define eccentricity.
c) What is true length of a line?
d) What do you mean by projections of a straight line?
e) What is the difference between a plane and solid?
f) What is an oblique plane?
g) What are different types of solids?
h) What is the difference between prism and pyramid?
i) What are the types of orthographic projections?
j) What is isometric scale?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. Construct a parabola, when the distance of the Focus from the directrix is 50 mm. Also draw a tangent and normal at any point on the curve. 12
- (OR)
3. The foci of an ellipse are 90 mm apart and the minor axis is 65 mm long. Determine the length of the major axis and draw half the ellipse by concentric-circles method and the other half by oblong method. Draw a curve parallel to the ellipse and 25 mm away from it. 12

UNIT-II

4. a) A point A situated 30mm above the H.P. and 25mm in front of the V.P., Draw its projections? 6
b) A line PQ, 90 mm long, is in the H.P. and makes an angle of 30° with the V.P. Its end P is 25 mm in front of the V.P. Draw its projections. 6
- (OR)
5. A line PQ 100 mm long is inclined at 30° to the HP and 45° to the VP. Its mid-point is in the V.P. and 20 mm above H.P. Draw its projections, if its end P is in the third quadrant and Q in the first quadrant. 12

UNIT-III

6. Draw a rhombus of diagonals 100 mm and 60 mm long, with the longer diagonal horizontal. The figure is the top view of a square of 100 mm long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground. 12
- (OR)
7. The top view of a plate, the surface of which is perpendicular to the V.P. and inclined at 60° to the H.P. is a circle of 60 mm diameter. Draw its three views. 12

UNIT-IV

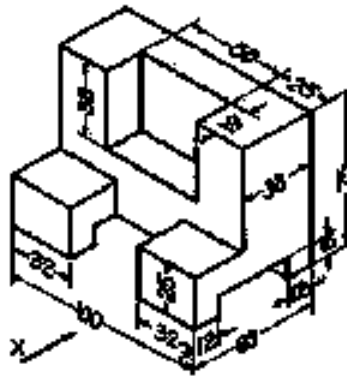
8. A hexagonal prism, base 40 mm side and height 40 mm has a hole of 40 mm diameter drilled centrally through its ends. Draw its projections when it is resting on one of its corners on the H.P. with its axis inclined at 60° to the H.P. and two of its faces parallel to the V.P. 12

(OR)

9. A hexagonal pyramid, base 30 mm side and axis 65 mm long, is resting on its base on the H.P. with two edges parallel to the V.P. It is cut by a section plane, perpendicular to V.P. inclined at 45° to the H.P. and intersecting the axis at a point 25 mm above the base. Draw the front view, sectional top view, sectional side view and true shape of the section. 12

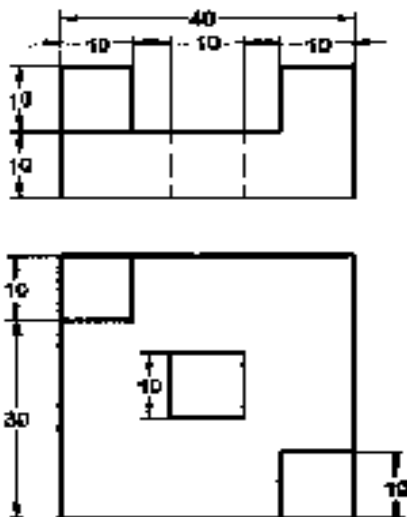
UNIT-V

10. Draw the following views of the object shown in fig. below. Draw
i) Front view. (ii) Top view iii) Side view. 12



(OR)

11. Draw the isometric projection of the block whose orthographic projections are shown in figure below. (All dimensions are in mm) 12



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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I B.Tech. II Semester Supplementary Examinations, August-2018

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 recursion.
b) What is time complexity of selection sort.
c) Represent a queue with example.
d) What is double linked list.
e) What is insertion sort?
f) Define binary search.
g) How are in-order and pre-order traversals performed.
h) How is deletion performed in binary search tree?
i) What is adjacency matrix?
j) What is adjacency list?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain Time and Space complexities and explain different Asymptotic Notations with examples 6M
b) Explain binary recursion with example. 6M
(OR)
3. a) Calculate Time complexity for factorial with recursion? 6M
b) Write an algorithm for inputting a string into array and reverse the string 6M

UNIT-II

4. a) Write a C program to implement Queue using arrays 6M
b) Analyze and explain diagrammatically how a node is to be inserted and deleted from the middle of Doubly linked list 6M
(OR)
5. a) Write a C program to implement circular queue using Linked lists 6M
b) Write a C program to reverse a single linked list 6M

UNIT-III

6. a) Write an Algorithm to search an element in an array by using Binary search 6M
b) Write a C program to implement insertion sorting technique 6M
(OR)
7. a) Write an algorithm to search an element in array by using linear search. 6M
b) Write an Algorithm to sort the given array by using Quick sort 6M

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SET-2

UNIT-IV

8. a) Differentiate various tree traversal techniques. 6M
b) Write a C Program to create, insert and display operations of Binary search tree 6M
(OR)
9. a) What is an AVL tree? Explain all rotations. 6M
b) Explain tree terminologies and briefly explain binary trees. 6M

UNIT-V

10. a) Differentiate various graph traversal techniques 6M
b) Distinguish Trees and Graphs? Explain with Basic Terminologies 6M
(OR)
11. a) Implement Dijkstra's algorithm with example. 6M
b) What are the various applications of Graphs 6M