AR20

CODE: 20EST101 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Regular/Supplementary Examinations, April, 2022

BASIC ELECTRICAL ENGINEERING

(Common to CIVIL, EEE, ECE)

Time: 3 Hours **Max Marks: 60**

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 the difference between an ideal source and a practical source? Draw the relevant characteristics of the above sources. 4M
   b) Calculate the equivalent between terminals A&B for the network shown below. 6M

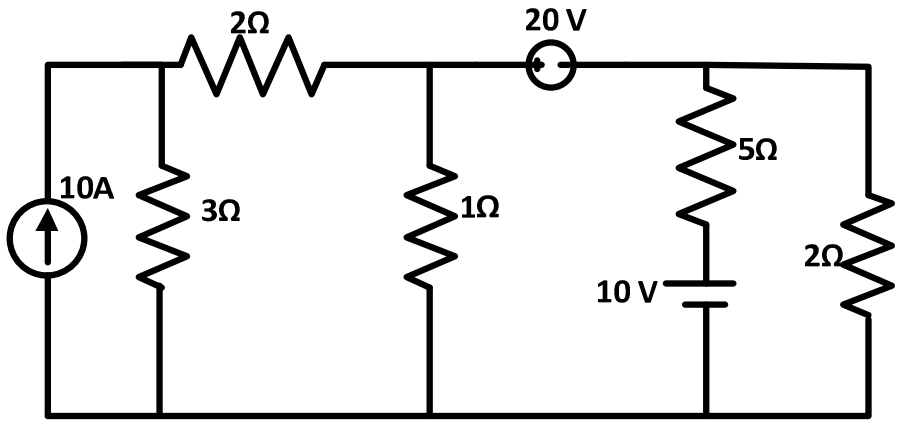
(OR)

2. a) State and explain Kirchhoff's laws with suitable examples. 6M
   b) Define i) Voltage ii) Current iii) Power iv) Energy 4M

UNIT-II

3. a) Find out the current through 9 ohm resister for the network shown below by using mesh analysis. 5M

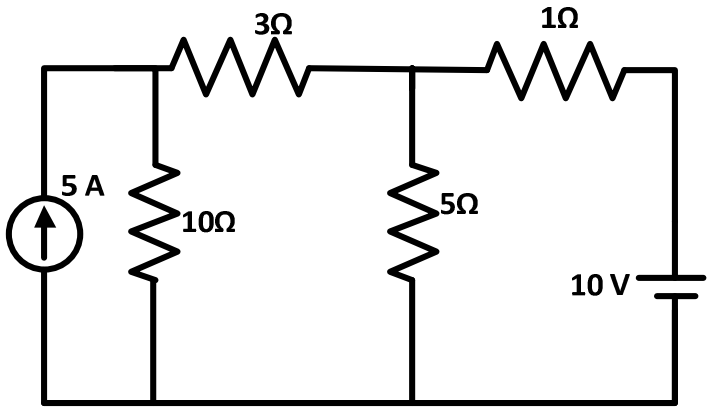
   b) Determine the current in the 5Ω resistor for the circuit shown in fig by using super node analysis. 5M



(OR)

4. a) Convert the following delta network into star network . 5M

b) Calculate the currents in each branch for the network shown in fig below, by using nodal analysis. 5M



UNIT-III

5. a) Define the following 4M
(i) RMS value (ii) Average value

b) Find the RMS value, average value, form factor and peak factor for the following wave form shown below. 6M

(OR)

6. a) Define the following 4M
(i)Impedance ,
(ii)Reactance.
(iii)Phase angle difference , and
(iv) Power factor.

b) The admittance of a circuit is (0.005-j0.08) mhos. Find the values resistance and inductive reactance of the circuit if they are connected (i) in parallel, and (ii) in series. 6M

UNIT-IV

7. a) Explain dot convention used in a magnetically coupled coil. 5M

b) A coil of 150 turns is linked with a flux of 0.01 Wb when carrying a current of 10A.Calculate the inductance of the coil. If this current is uniformly reversed in 0.01s, Calculate the Induced e.m.f? 5M

(OR)

8. a) Define the following terms. 4M
(i)Magneto Motive Force(MMF)
(ii)Magnetic Flux
(iii)Reluctance connected with magnetic circuit.

b) Write down the differences between electrical and magnetic circuits. 6M

UNIT-V

9. a) State the different types of DC Generators with relevant diagrams. 5M

b) Derive the expression for EMF equation of DC generator. 5M

(OR)

10. Explain with a neat sketch, the construction of a DC Machine. 10M

UNIT-VI

11. Draw a neat sketch and explain the operation of a three point starter. 10M

(OR)

12. a) What is back e.m.f? Explain the significance of a back e.m.f. 5M

b) Derive the expression for torque equation of DC motor. 5M

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AR20

CODE: 20ESI102 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Regular/Supplementary Examinations, April, 2022

PROGRAMMING FOR PROBLEM SOLVING

(Common to MECH, CSE, IT, AI&ML)

Time: 3 Hours **Max Marks: 60**

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) Identify different sections present and absent In the Below C program structure.

```
#include <stdio.h>
#define PI 3.14
int main( )
{
  int num1,num2;
  printf("Enter value of num1: ");
  scanf("%d",&num1);
  num1+=PI;
  printf("Enter value of num2: ");
  scanf("%d",&num2);
  printf("Before Swapping: num1 is: %d, num2 is:
%d\n",num1,num2);
  swap(&num1,&num2);
  printf("After  Swapping: num1 is: %d, num2 is: %d\n",num1,num2);
   return 0;
}

void swap(int *x, int *y)
{
   int t;
    t   = *x;
   *x   = *y;
   *y   =  t;
}
```

5M

b) What is a Expression and evaluate the flowing expressions 5M

i) x = 4 > 8 ? 5 != 1 < 5 == 0 ? 1: 2: 3;

ii) j=2*3/4+2.0/5+8/5;

iii) x = 9 – 12 / (3 + 3) * (2 – 1)*(int)3.5/sizeof(6);

(OR)

2. a) Write an algorithm and draw flowchart to find biggest of given three numbers. 5M

b) Write a C program to calculate the area of triangle for s=(a+b+c)/2 using formula area=$(s(s-a)(s-b)(s-c))^{1/2}$ 5M

UNIT-II

3. a) Write a C program that prompts the user to input number of calls and calculate the monthly telephone bills as per the following rule: 5M
   Minimum Rs. 200 for up to 100 calls.
   Plus Rs. 0.60 per call for next 50 calls.
   Plus Rs. 0.50 per call for next 50 calls.
   Plus Rs. 0.40 per call for any call beyond 200 calls
   b) Write a C Program to print all Pronic numbers between 1 and 100 The pronic number can be defined as the number which is a product of two consecutive numbers. Mathematically, the Pronic number can be represented as N x (N + 1), Some of the examples of Pronic numbers are 6,72 (6 = 2 x 3,72 = 8 x 9). 5M

(OR)

4. a) To Find Biggest and Smallest of three Numbers using Nested if 5M
   b) Write a C program to print Fibonacci series. 5M

UNIT-III

5. a) Write a C-program to find the largest element stored in an array 5M
   b) Implement C Program using any numerical method. 5M

(OR)

6. a) Write a program in C to perform addition of two matrices. 5M
   b) Find the sum and average of list of elements using DMA Functions. 5M

UNIT-IV

7. a) Differentiate between call by value and call by reference. 5M
   b) Define Function? Explain types of functions with examples. 5M

(OR)

8. a) Write a program in C to check a number is a prime number or not using recursion. 5M
   b) Write a program in C to get the largest element of an array using recursion. 5M

UNIT-V

9. a) Write a C Program to Store Information of 50 Students Using Structure 5M
   b) Write a C Program to implement Structures with Dynamic Memory Allocation functions. 5M

(OR)

10. a) Write a C Program to implement Nested Structures 5M
    b) Write a C Program to implement Union in Structure with Example. 5M

UNIT-VI

11. a) Write a C program to print contents in reverse order of a file 5M
    b) Write a C Program converts the content of file to UpperCase. 5M

(OR)

12. a) Copy the contents of one file into another. 5M
    b) Write a program to create a file with some integers and read the numbers from the file and display even and odd separately. 5M

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AR18

CODE: 18EST101 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, April, 2022

BASIC ELECTRICAL ENGINEERING
(Common to EEE, ME & ECE Branches)

Time: 3 Hours **Max Marks: 60**

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)	Define the terms (a) Inductance, (b) Capacitance, (c) Electric power and (d) Electrical Energy.	**8M**
	b)	A 100 watt, 250 V lamp is connected in series with a 100 watt, 200 V lamp across 250 V supply. Find (i) circuit current and (ii) voltage across each lamp. Assume the lamp resistances to remain unaltered.	**4M**

(OR)

2.	a)	Explain Kirchhoff's voltage law with a suitable example.	**6M**
	b)	Develop the expressions for the delta-connected branch resistances when three resistances R_1, R_2 and R_3 are connected in star fashion.	**6M**

UNIT-II

3.	a)	Define the peak value and root mean square value of an alternating quantity.	**4M**
	b)	A capacitor of 50 micro farads is connected in series with a resistor of 50 Ω. The circuit is connected across a 220 V, 50 Hz, single-phase supply. Find the circuit current, circuit power factor, voltage across the capacitor and power consumed.	**8M**

(OR)

4.	a)	Define the terms (a) Power factor, (b) Lagging quantity, (c) Leading quantity and (d) Phase.	**8M**
	b)	Develop the expressions for the circuit current, phase angle and power factor of an RL-series circuit.	**4M**

UNIT-III

5.	a)	Explain the Faraday's laws of electromagnetic induction with neat sketches.	**4M**
	b)	With neat diagrams, explain the constructional details of a DC machine.	**8M**

(OR)

6.	a)	Explain the principle of operation of a DC motor with suitable diagrams.	**6M**
	b)	Develop the equation for counter EMF induced in a DC motor.	**6M**

UNIT-IV

7.	a)	Develop the equation for EMF induced in a single-phase transformer.	**4M**
	b)	Define and explain the voltage regulation and efficiency of a single-phase transformer with suitable formulae.	**8M**

(OR)

8.	a)	With a suitable diagram, explain the no-load testing of a single-phase transformer.	**6M**
	b)	Explain the components of core loss that occur in a transformer.	**6M**

UNIT-V

9.	a)	Develop the expression for the torque developed in an induction motor.	**6M**
	b)	With neat diagrams, explain different types of three-phase induction motors.	**6M**

(OR)

10.	a)	Define the terms (a) Synchronous speed, (b) Slip and (c) Torque.	**6M**
	b)	Explain the speed-torque characteristic of an induction motor with neat sketch.	**6M**

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AR18

CODE: 18EST102 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, April, 2022

PROGRAMMING FOR PROBLEM SOLVING

(Common to CE, CSE, IT Branches)

Time: 3 Hours **Max Marks: 60**

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)	Differentiate procedural and object oriented programming with example?	6M
	b)	Explain about structure of a C program with example?	6M
		(OR)	
2.	a)	Explain memory unit of a Computer?	4M
	b)	Define an operator? List out various types of operators and explain them with examples?	8M

UNIT-II

3.	a)	Write a C program to find largest number among three numbers?	6M
	b)	Difference between pre test and post test loop with examples?	6M
		(OR)	
4.	a)	Using a nested for loop print following pattern 1 1 2 1 2 3 1 2 3 4	6M
	b)	Write a C program to print Fibonacci series up to a certain number?	6M

UNIT-III

5.	a)	Write a C program to find addition of two matrices?	6M
	b)	Explain about storage classes with suitable examples?	6M
		(OR)	
6.	a)	Write a C program to concatenate two strings with using string handling functions?	4M
	b)	Differentiate call by value and call by reference with suitable examples?	8M

UNIT-IV

7.	a)	What is a Pointer in C? Explain types of pointers in C?	6M
	b)	Explain about an array of pointers with suitable examples?	6M
		(OR)	
8.	a)	Explain Dynamic Memory Management functions along with suitable examples?	9M
	b)	Explain about pointer to pointer in C with example?	3M

UNIT-V

9.	a)	Define Structure and write a C program to print movie details using Structures?	8M
	b)	Define a File in C? Explain file input and output functions?	4M
		(OR)	
10.	a)	Differentiate between Structure and Union in C with an example?	6M
	b)	Write a C program to copy the content of one file into another file?	6M

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AR16

CODE: 16EE1001 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, April, 2022

BASIC ELECTRIC CIRCUIT ANALYSIS

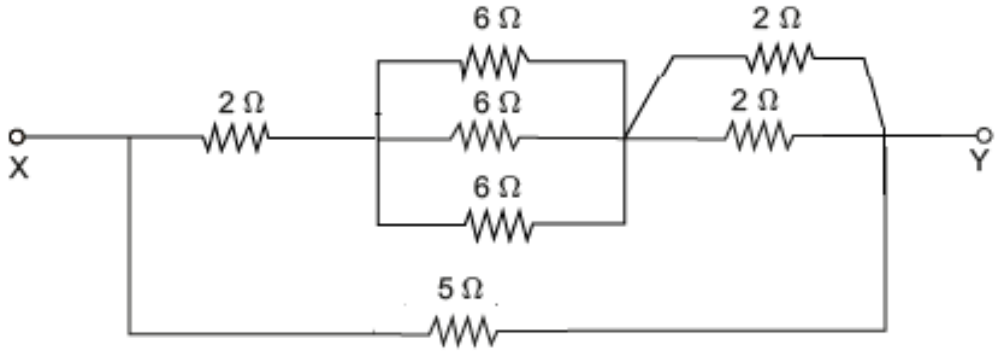
(Electrical and Electronics Engineering)

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) Find the equivalent resistance between the terminals XY as shown in the circuit



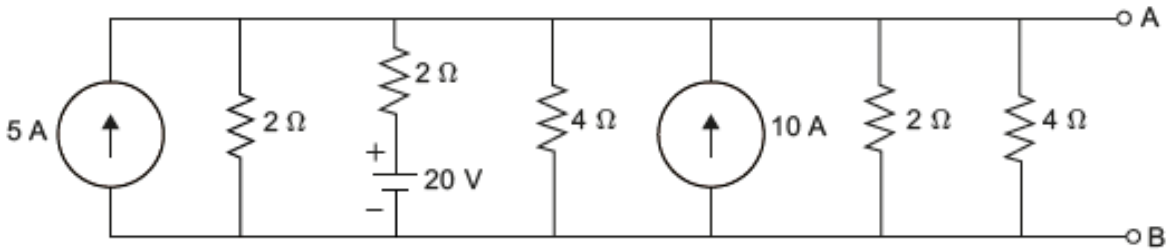
6M

b) Derive star to delta and delta to star transformation 8M

(OR)

2. a) A voltage of 60 V DC is applied across two capacitors, each of 100 μF. Find the voltage sharing between them if they are connected in series. What is the energy stored in each of the capacitors? 7M

b) By using source transformation technique, convert the circuit shown into a single voltage source and single resistance.

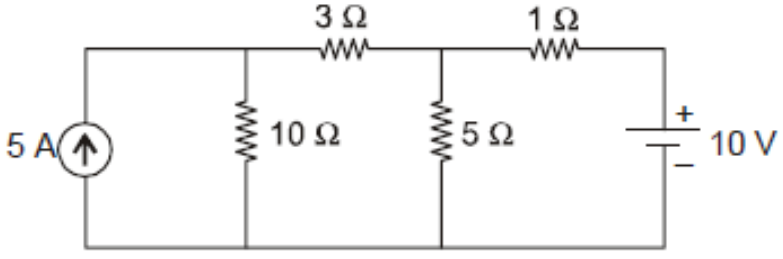


7M

UNIT-II

3. a) Explain the mesh analysis with a schematic diagram 7M

b) Write the node voltage equations and determine the node voltages for the network shown in figure.



7M

(OR)

4. a) Derive the expression for equivalent inductance of a series connected (aiding) magnetically coupled coils. 7M

b) Derive the formula for mutual inductance in terms of coefficient of coupling and self-inductance. 7M

UNIT-III

5. a) Find the amplitude, phase, period and frequency of the sinusoid as given by $v(t) = 20\cos(50t + 70^0)$. 7M

b) The equation of an alternating current is $i(t) = 42.42\sin(628t)$. Determine (i)RMS value (ii) Average value (iii) Form factor (iv) Peak factor 7M

(OR)

6. a) What is power triangle. Explain various powers with their fromulae. 6M

b) A voltage $v(t)$=120sin314t is applied to a series circuit consisting of 15Ω resistance, 0.04 H inductance and a capacitance of 50 μF. Calculate (i) Expression for current i(t), (ii) Phase angle between voltage and current, and (iii) power factor 8M

UNIT-IV

7. a) Compare series and parallel resonance circuits 6M

b) A circuit having a resistance of 5Ω and inductance of 0.4H and a variable capacitance C in series is connected across 110V, 50Hz supply. Calculate (i) the value of capacitance to give resonance (ii) current (iii) V_L and V_C (iv) Q-factor 8M

(OR)

8. a) (a)Prove that the resonant frequency is the geometric mean of two half power frequencies 8M

b) (b)A series RLC circuit with R= 100Ω, L=0.5H and C=40μF has an applied voltage of 50V with variable frequency. Calculate (i)Resonant frequency, (ii)Current at resonance, and (iii) Voltage across R, L and C 6M

UNIT-V

9. a) Find relation between the line and phase value of voltage and current in a balanced star connected load. 7M

b) Two wattmeters are used to measure power input to a 1.5kV, 50Hz, 3-phase motor running on full load at an efficiency of 85%. Their readings are 250kW and 80kW respectively. Calculate i)input ii)Power factor iii)Line current iv)Output 7M

(OR)

10. a) Define the following terms with reference to a 3-phase system (i) Phase sequence, (ii) Positive phase sequence, and (ii) Negative phase sequence 6M

b) A 3-phase 220 V supply is applied to a balanced3-phase delta connected load of(6+ j8)Ω in each phase. Determine the phase currents and line currents. Take phase sequence as ABC. 8M

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AR16

CODE: 16CS1001 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, April, 2022

COMPUTER PROGRAMMING

(Common to CE, ME, 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)	Can we directly run the source program written in C language on a computer directly without translation? Why? Explain the steps to prepare your source program into executable program.	7M
	b)	Write a short note on different data types that C Language Support.	7M
		(OR)	
2.	a)	With suitable examples distinguish between "keywords" and "identifiers"	7M
	b)	What is an algorithm? Explain the steps involved in the development of an algorithm.	7M

UNIT-II

3.	a)	Compare the following pairs of statements with respect to their syntax and function: a). break and continue b). goto and break	7M
	b)	Write a C program to obtain the sum of first and last digits of the given integer number.	7M
		(OR)	
4.	a)	Discuss about different kinds of loops available in C with examples	7M
	b)	Write a well structured C program to find the average of prime numbers among the numbers entered by the user.	7M

UNIT-III

5.	a)	Explain how to declare, access, read, display 1D array with examples.	7M
	b)	Explain, in brief the purpose of the following string handling functions: (i) strcat() (ii) strcmp() (iii) strcpy() Use suitable examples.	7M
		(OR)	
6.	a)	Illustrate different types of function in C.	7M
	b)	Develop a C program to concatenate two strings without using strcat() function	7M

UNIT-IV

7.	a)	Explain Dynamic memory management functions with examples.	7M
	b)	Compare and Contrast structures and unions ?	7M
		(OR)	
8.	a)	How do you define a structure, structure variables, access their elements and perform operations on them? Explain with examples	7M
	b)	Explain pointers and structures by giving an example of pointer to structure variable?	7M

UNIT-V

9.	a)	How data to read from and write to a file? Explain with examples?	7M
	b)	Write a C program to copy the content of one file into another file.	7M
		(OR)	
10.	a)	Explain different random file access functions with example.	7M
	b)	Create two text files and write a program to add the contents of one file at the end of another.	7M

AR13

CODE: 13CS1001 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, April, 2022
COMPUTER PROGRAMMING
(Common to CIVIL, MECH, CSE, IT)

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

PART-A

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

1. a) Define Algorithm.
   b) What are the Bitwise operators in C?
   c) Write the syntax of **simple-if** statement.
   d) Illustrate the output of the following C program

```
#include<stdio.h>
main() {
int a=10
printf("%d %d",a, !a++);
}
```

   e) How we can represent a string constant in a C program?
   f) How structure different from array?
   g) What is the difference between pointer and a double pointer?
   h) Define a structure to store customer id, name and address.
   i) Differentiate w and w+ modes in files.
   j) What are relational operators?

PART-B

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

UNIT-I

2 a Explain structure of C program with an example. **6 M**
b Write a program to find largest between two numbers. **6 M**

(OR)

3 a Develop an algorithm to find GCD of given 2 numbers. **6 M**
b Given the marks obtained by the students, maximum marks and pass marks in three subjects, design an algorithm and draw flowchart to find whether the student passed or not, if the student passes determine the percentage marks and grade. **6 M**
The grade is determined as follows:
i) percentage marks >=80 grade is A
ii) percentage marks >=70 and <80 grade is B
iii) percentage marks >=60 and <70 grade is C
iv) percentage marks >=50 and <60 grade is D
v) percentage marks <50 grade is F
Design and algorithm to calculate grade of the student by reading three subject marks.

UNIT-II

4. a Explain decision making control statements (if, if else, nested if) **6 M**
b Build a program to find whether the given number is a prime or not by using control loops? **6 M**

(OR)

5 a Develop a program to find whether the given number is a strong or not by using control loops?(145=1!+4!+5!=145) **6 M**

b Develop a program to produce following output for given number of rows R: **6 M**

```
1
2  3
4  5  6
7  8  9  10
```

UNIT-III

6. a Write a program to merge to sorted arrays **6 M**

b Develop a program to read two strings **str1** and **str2** from the user and then find whether the given two strings are equal or not without using **string.h** library functions. **6 M**

7 a Explain string functions strcat() ,strcpy()and strcmp() with examples? **7 M**

b Distinguish the concept of Call-by-Value and Call-by-Reference. **5 M**

UNIT-IV

8. a Define Pointer. Differentiate Pointer variable and Ordinary variable. Explain the Operations on Pointers with an Example Program. **6 M**

b Write a program to delete value from a list by using pointers. **6 M**

(OR)

9. a Explain dynamic memory management functions with example program. **4 M**

b Explain nested structure with an example program. **8 M**

UNIT-V

10 Write a program to read student data consisting of Id.No, Name and marks in six subjects from the keyboard, write it to a file called INPUT, again read the same data from the file INPUT, and find the total and percentage marks of each student. Display the output in tabular form. **12 M**

(OR)

11 a Develop a program to copy one file into another. Copy one character at a time. **6 M**

b Explain i) fseek() ii) ftell () iii) fopen() **6 M**

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