AR20

CODE: 20EST101 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

BASIC ELECTRICAL ENGINEERING

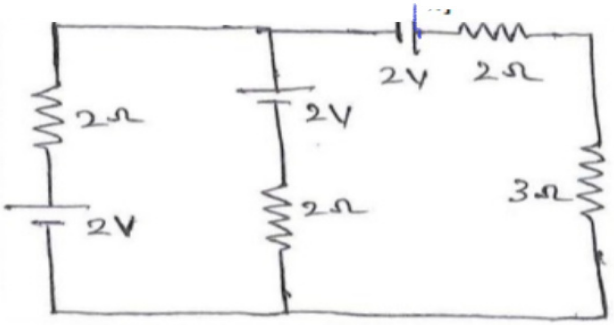
(Common to CIVIL, EEE, ECE)

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

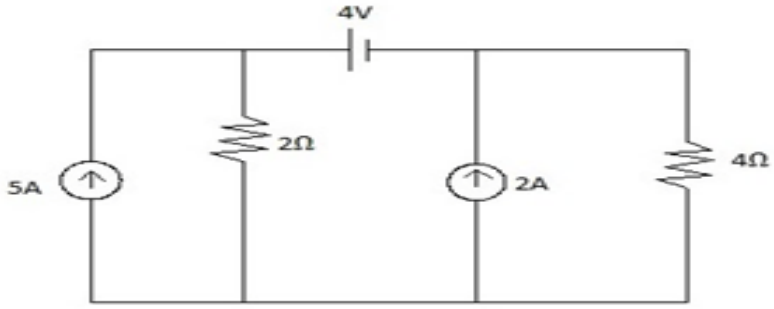
UNIT-I

1. a) Explain three passive bilateral elements of electrical circuit 5M
   b) Find the current flowing through the 3ohm resistor using source transformation for circuit shown below: 5M



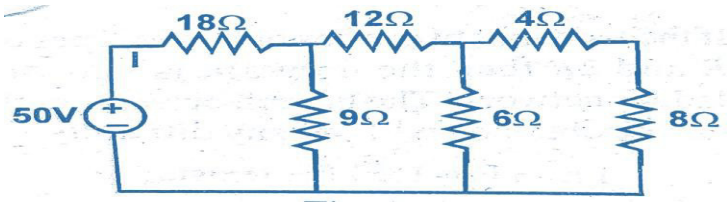
(OR)

2. a) Explain KCL and KVL with example. 5M
   b) Find the current flowing through 4Ω resistor shown in network below. 5M



UNIT-II

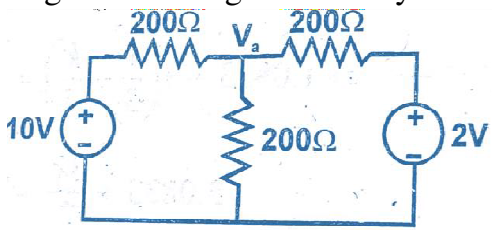
3. a) What is mesh analysis. Write the basic steps to solve a problem by applying meshanalysis. 5M
   b) Find branch currents for thecircuit shown below: 5M



(OR)

4. a) What is nodal analysis. Write the basic steps to solve a problem by applying nodeanalysis. 5M

b) Find V_a in the following circuit using nodal analysis 5M



UNIT-III

5. a) Define (i) Average value (ii) RMS value (iii) Form factor (iv) Peak factor 5M
   b) A coil has a resistance of 10 Ω and draws a current of 5 A when connected across a 230-V 50-Hz source. What is the inductance of the coil? 5M

(OR)

6. Derive average, RMS values of a sinusoidal wave form. Assume V (t) = V_m sinwt. 10M

UNIT-IV

7. a) Obtain the expression for coefficient of coupling(K) 5M
   b) Derive the expression of equivalent inductance of two series connected coupled coils 5M

(OR)

8. a) Two coupled coils of L1 = 0.8 H and L2 = 0.2 H have a coupling coefficient k = 0.9. Find the mutual inductance M. 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 0.01 sec, calculate the induced e.m.f. 5M

UNIT-V

9. a) Derive the EMF equation of DC generator. 5M
   b) Calculate the flux in a 4-pole DC generator with 722 armature conductors generating 500 V when running at 1000 r.p.m. when the armature is a) lap connected b) wave connected. 5M

(OR)

10. a) Draw and Explain the Internal and External Characteristics of DC shunt generators 5M
    b) A 6-pole d.c generator runs at 850 r.p.m and each pole has a flux of 12mwb. If there are 150 conductors in series between each pair of brushes, what is the value of generated e.m.f? 5M

UNIT-VI

11. a) Discuss in detail, the methods of control of speed of a DC motor. 5M
    b) A 440 V D.C shunt motor takes 4A at no load. Its armature and field resistances are 0.4 ohms and 220 ohms respectively. Estimate the kW output and efficiency when the motor takes 60A on full load. 5M

(OR)

12. Explain the principle and operation of 3-point starter with neat diagram. 10M

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AR20

CODE: 20ESI102 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

PROGRAMMING FOR PROBLEM SOLVING

(Common to MECH, CSE, IT & AIML)

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) Draw a flowchart to find the roots a of quadratic equation. 5M
   b) Explain different types of constants used in a C-program with suitable examples. 5M

(OR)

2. a) Identify different syntax and semantic errors present In the Below C program 5M

```
#include <stdio.h>
void main( )
{
   double x, y = 0  z;
   char c=”GEC”
   x = 1 / y;
   printf("x = %f and y=%f\n", x);
   return 0;
}
```

   b) Write an algorithm and draw a flow chart to calculate area of a triangle. 5M

UNIT-II

3. a) Write a C program which reads 5 integers and prints the largest among them using nested if-else statement. 5M
   b) Write a C Program to determine whether a given number is a Harshad number(A number is said to be the Harshad number if it is divisible by the sum of its digit. For example, if number is 156, then sum of its digit will be 1 + 5 + 6 = 12. Since 156 is divisible by 12. So, 156 is a Harshad number.) 5M

(OR)

4. a) Write a C program To calculate grade of students in python, you have to ask from user to enter marks obtained in 5 subjects and calculate the sum of all the marks and then average marks to find the grade according to the average marks obtained by student as shown in the given below: 5M

Percentage	Grade
≥ 90	O
≥ 80 & < 90	A+
≥ 70 & < 80	A
≥ 60 & < 70	B+
≥ 50 & < 60	B
≥ 40 & < 50	C
< 40	F

   b) An Armstrong number is a number that is sum of its own digits each raised to the power of number of digits. Write a C program to check whether the given number is Armstrong number or not 5M

UNIT-III

5. a) Implement the Matrix Multiplication using arrays. 5M
   b) Write a program to find sum of the given array numbers using pointer 5M

(OR)

6.	a)	Write a C program to find the trace & normal of a given matrix	5M
	b)	Write a program to find sum of squares of the given array numbers using pointer	5M

UNIT-IV

7.	a)	Write about storage classes in C	5M
	b)	Write a program to multiply the given two number using recursion	5M
		(OR)	
8.	a)	Write a program to swap the given two numbers using call by reference	5M
	b)	Write a program to find the length of given string using recursion	5M

UNIT-V

9.	a)	Create a student structure with fields (Firstname, Surname,Branch,six subject marks ,average),wirte a C Program to count number of students with same Surname or Firstname , display students with lowest and highest averages in a class of sixty students.	5M
	b)	Define Union. Differentiate structure and union	5M
		(OR)	
10.	a)	Write functions to read, add, subtract of two complex numbers. Use structures to represent complex numbers.	5M
	b)	Write a program to illustrate the method of sending an entire structure as a parameter to a function?	5M

UNIT-VI

11.	a)	Explain about i)ftell() ii)fseek() iii)rewind()	5M
	b)	Write a C Program to count number of characters, lines, words in the file	5M
		(OR)	
12.	a)	Write a C-program to read the contents of the file and display on the console.	5M
	b)	Write a C-program to merge two files into another file.	5M

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AR18

CODE: 18EST101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

BASIC ELECTRICAL ENGINEERING

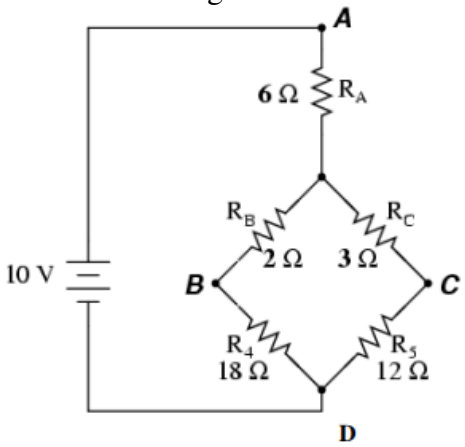
(Common to EEE, ME. ECE Branches)

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

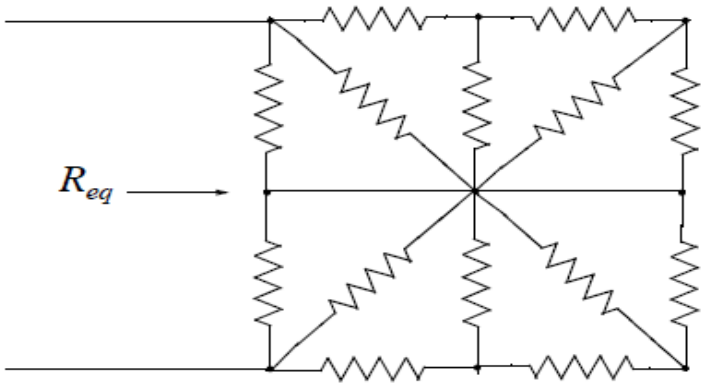
UNIT-I

1. a) State and explain Kirchhoff's voltage and current law with an example 6M
   b) Find voltage across 12Ω resistance using Kirchhoff's laws 6M

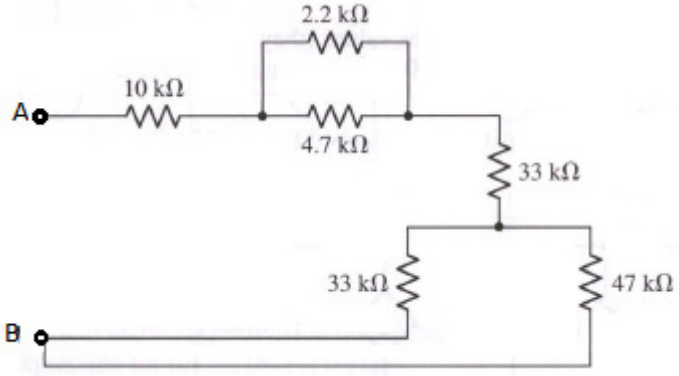


(OR)

2. a) In the network of Figure, each resistor is 10 Ω. Compute the equivalent resistance. 6M

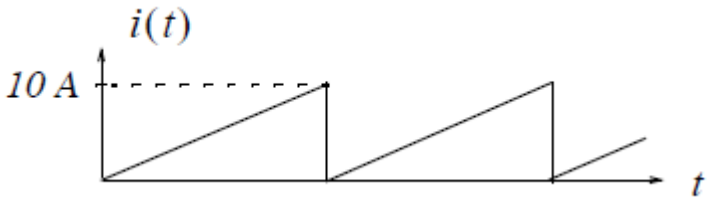


b) Obtain the equivalent resistance between open circuit terminals A and B. 6M



UNIT-II

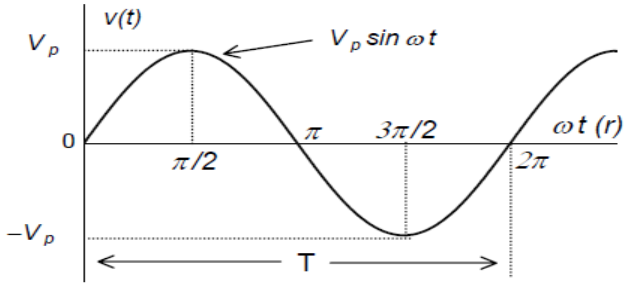
3. a) Compute the I_{avg} and I_{rms} for the sawtooth waveform shown in Figure 8M



b) Define power factor and quality factor in RLC series circuit. 4M

(OR)

4. a) Compute the average value of the sinusoidal waveform shown in Figure, where denotes the peak (maximum) value of the sinusoidal voltage. 6M



b) Find the average power deliverd to a 4Ω resistor by the current i1= 2 cos10t - 3 cos20t amps. 6M

UNIT-III

5. a) Explain the construction details of D.C.Generator? 6M

b) A shunt generator supplies 96A at a terminal voltage of 200V.The armature and shunt field resistances are 0.1 ohm and 50 ohms respectively. The iron and frictional losses are 2500W.Find (i)e.m.f generated (ii)copper losses (iii)efficiency 6M

(OR)

6. a) Discuss the different speed control methods of DC shunt and Series motors. 6M

b) Mention the applications of DC motors. 6M

UNIT-IV

7. a) With neat circuit diagram, Explain the procedure for conducting OC&SC test on a given 1-ø Transformer to predetermine the regulation and efficiency. 6M

b) A 10KVA 2000/400v 1-ø Transformer has R_1=5Ω, X_1=12Ω, R_2=0.2Ω, X_2=0.48Ω. Determine the equivalent impedance of transformer referred to i) primary side ii) secondary side. 6M

(OR)

8. a) Draw and Explain the equivalent circuit of a 1-ϕ transformer. 6M

b) In a 100KVA transformer, the iron lossesis 1.2kw and full load copper losses is 2kw. If the load p.f is 0.8 lagging, find the efficiency at (i) full load (ii) half -load 6M

UNIT-V

9. a) Explain how the rotating magnetic field is produced in 3- Φ induction machine 6M

b) A 6-pole 50Hz, 3-phase induction motor runs at 960 r.p.m. when the torque on the shaft is 200 N-m. If the stator losses are 1500W and the friction and windage losses are 500W, find the (i) rotor Cu loss and (ii) efficiency of the motor. 6M

(OR)

10. a) Derive the torque equation of 3-Φ induction motor .Hence derive the condition for maximum torque to occur during running conditions 6M

b) A 3-Φ induction motor is operating at a slip of 5%, the output is 36.75kw and the total mechanical losses are 1.5kw.Estimate the cu losses in the rotor. if the stator losses are 4kw,calculate the efficiency of the motor? 6M

AR18

CODE: 18EST102 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-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)	What is algorithm? What are the main steps followed in the development of an algorithm? Write an algorithm to find the sum of first 'N' natural numbers.	6M
	b)	Explain bitwise, increment and decrement, conditional operators with examples.	6M
		(OR)	
2.	a)	What is meant by a variable in C programming? How a variable is initialized? Explain the rules for defining variable names.	6M
	b)	What is meant by type conversion? Why is necessary? Explain about implicit and explicit type conversion with examples.	6M

UNIT-II

3.	a)	Explain if-else statement and nested if-else statement with syntaxes and suitable examples.	6M
	b)	Write a C program to find factorial of given number using for loop.	6M
		(OR)	
4.	a)	Explain in detail about multi-way selection statements with example.	8M
	b)	Write a C program to evaluate sum of first n natural numbers using while loop	4M

UNIT-III

5.	a)	What are various storage classes in C? Discuss their uses and scope.	6M
	b)	Write a function to obtain greatest common divisor (GCD) of two integers m and n and use it to find the LCM (least common multiple) using the formula LCM =m × n / GCD	6M
		(OR)	
6.	a)	Write about declaration and accessing of Two-Dimensional arrays with suitable example.	6M
	b)	What are the different ways of passing parameters to the function? Explain.	6M

UNIT-IV

7.	a)	What is a pointer? Write about declaration and initialization of pointer variables and explain Pointer to Pointer with suitable examples	6M
	b)	Write about pointers as function arguments with suitable examples	6M
		(OR)	
8.	a)	Explain the arithmetic operations on pointers with example.	6M
	b)	Explain the following dynamic memory management functions with example: (i) malloc( ) (ii) realloc( ) (iii) free( )	6M

UNIT-V

9.	a)	Define a structure. Describe how to declare and initialize structure and its members with an example.	6M
	b)	Write a program to merge two files into single file.	6M
		(OR)	
10.	a)	Explain the following functions in files: (i) fopen( ) (ii) fclose( ) (iii) fputc() (iv) fgetc() (v) feof()	6M
	b)	What is a nested structure? Explain its importance with an example.	6M

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AR16

CODE: 16EE1001 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-2022

BASIC ELECTRIC CIRCUIT ANALYSIS

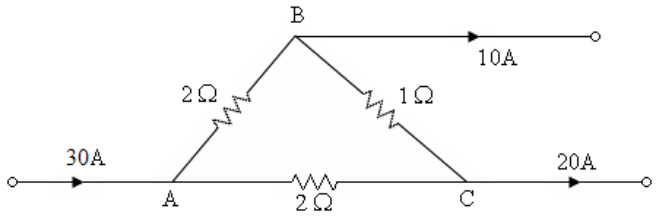
(Electrical and Electronics Engineering)

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 power dissipated in each resistor in the circuit as shown in the circuit. 6M



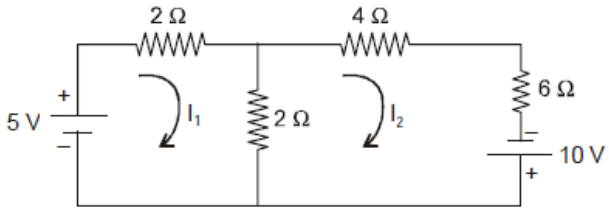
b) Derive star to delta and delta to star transformation 8M

(OR)

2. a) Explain passive elements of electric circuit. 6M
b) Explain different types sources with their characteristics. 8M

UNIT-II

3. a) Explain the nodal analysis with a schematic diagram 7M
b) Find the mesh current I_1 and I_2 for the circuit as shown in the figure 7M

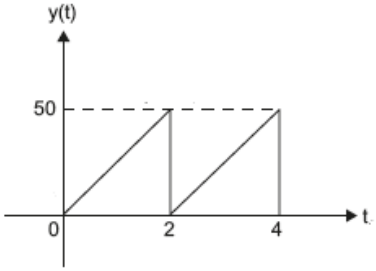


(OR)

4. a) Derive the expression for equivalent inductance of a series (opposing) connected 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) An alternating current i(t) is given by i(t) = 141.4sin (314t). Find
i) The maximum value, ii) Frequency, iii) Time Period, and iv) The instantaneous value when, t=3 msec 6M
b) Find the average and effective values, form factor and peak factor of the saw-tooth waveform as shown in figure. 8M



(OR)

6. a) A voltage of (100+j60) V drives a current of (4-j5)A through a series R-L-C circuit. Determine (i) Impedance (ii) Power consumed (iii) Power factor — 7M
   b) In case of pure inductor the current lags the voltage by 90^0. Justify? — 7M

UNIT-IV

7. a) Compare series and parallel resonance circuits — 6M
   b) A series RLC circuit with R= 100Ω, L=0.5H and C=40μF has an applied voltage of 50Vwith variable frequency. Calculate (i) Resonant frequency (ii) Current at resonance (iii)Voltage across R, L and C (iv) Band-width — 8M

(OR)

Prove the following conditions in resonance

8. (i) $Q = \frac{\omega_0}{\Delta\omega}$ *or* $\frac{f_0}{\Delta f}$ (ii) $\omega_0 = \sqrt{\omega_1\omega_2}$ *or* $f_0 = \sqrt{f_1 f_2}$ — 14M

UNIT-V

9. a) Find the relation between the line and phase voltage of voltage current in a balanced delta connected load. — 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

(OR)

10. a) Define the following terms with reference to a 3-phase system
    (i) Phase sequence, (ii) Positive phase sequence, (iii) Negative phase sequence
    (iv) Balanced load, and (v) Balanced supply system — 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

AR16

CODE: 16CS1001 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech I Semester Supplementary Examinations, June-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.

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UNIT-I

1.	a)	Explain the steps involved in program development process?	7M
	b)	Write an algorithm to solve the quadratic equation. Assume necessary details	7M
		(OR)	
2.	a)	List out and explain arithmetic, relational and logical operators with an example.	7M
	b)	Write an algorithm and draw the flowchart for finding average of 20 numbers entered by the user.	7M

UNIT-II

3.	a)	Is it possible to declare an integer variable by name "goto" in C program? Why? Explain the consequences if we declare the one.	7M
	b)	Write a C program using while loop to reverse the digits of a given number. (for example, If number is=1234567 then output number is= 7654321)	7M
		(OR)	
4.	a)	Differentiate between if statement and if-else statement with suitable examples and proper syntax.	7M
	b)	Write a well structured C program to find the reverse of a number	7M

UNIT-III

5.	a)	Distinguish one dimensional arrays with multi-dimensional arrays?	7M
	b)	Construct a C program to check the given string is palindrome without using string handling functions.	7M
		(OR)	
6.	a)	Given are two one dimensional arrays A and B which are stored in ascending order. Write a program to merge them into a single sorted array C that contains every element of A and B in ascending order.	7M
	b)	Write a C program to find factorial of a given number using recursive function	7M

UNIT-IV

7.	a)	What is a pointer? How it is declared? Write a C program to reverse a string using pointers.	7M
	b)	Write a C program which shows the usage of pointers to pointers.	7M
		(OR)	
8.	a)	What are the differences between malloc() and calloc() functions. Explain them with the examples.	7M
	b)	Write a well structured C program to find the average of an array using pointer	7M

UNIT-V

9.	a)	Explain the following functions in file operations: (i) getw( ) (ii) putw() (iii) fscanf( ) (iv) fprintf( )	7M
	b)	Write a C program to read and display the contents of a file	7M
		(OR)	
10.	a)	Explain file-handling functions available in 'C' with examples?	7M
	b)	Write a C program to print last n characters of a given file in reverse order.	7M

AR13

CODE: 13CS1001 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, June-2022

COMPUTER PROGRAMMING
(Common to CE, ME, CSE & IT)

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

PART-A

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

1. a) What is a function?.
   b) How does a while loop differ from do-while loop?
   c) What is the use of sizeof( ) function?
   d) What is the return value of scanf( ) function?
   e) What is the purpose of **break** statement?
   f) Define a global variable?
   g) Is main() function user defined or pre defined? Justify your answer
   h) Define a file pointer with example?
   i) What is the output of the following C program?

```
Void main ()
{
  int a=30,k;
  k=(a>10 ? (a<=20 ? 50: 100) : 200);
  printf("k:%d a:%d", k,a);
}
```

   j) Difference between getc( ) and getch( )?

PART-B

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

Unit-I

2) a) Define a Algorithm and flow chart ? Write an algorithm and draw the flow chart for finding roots of quadratic equation.
   b) Explain in detail about program development steps. [6M+6M]

(OR)

3) a) Explain in detail about any four types of operators with examples.
   b) Explain about C tokens in detail. [6M+6M]

Unit-II

4) a) Explain about all types of **if** condition control structures with its syntax, flow charts and examples,.
   b) Write a program to check whether the given number is strong number or not .
   (Hint : 145 = 1! + 4! + 5!) [6M+6M]

(OR)

5) a) Write a C Program to produce the following output using nested loops.

```
        1
      1 2 1
    1 2 3 2 1
  1 2 3 4 3 2 1
```

b) Explain about switch statement with syntax and flow chart .Write program to find the area of a triangle using a) sides are given b) base and height are given c) co-ordinates are given

[6M+6M]

Unit-III

6) a) What is two dimensional array and write the syntax? Write a program for matrix addition?
b) Explain any three string handling functions with program

[6M+6M]

(**OR)**

7) a) Explain various types of functions according to return value and arguments with example programs.
b) Write about all storage classes with examples?

[6M+6M]

Unit-IV

8) a) Explain in detail about definition, declaration and initialization of a structure with in a structure with example program

b) Write a 'C' program to illustrate the difference between structure and union.

[6M+6M]

(**OR)**

9) a) Write a program to illustrate the method of passing an array as a parameter to a function?
b) Write a program to use an array with in a structure.

[6M+6 M]

Unit V

10) a) Define a file and elaborately discuss about reading, opening and closing of a file.
b) Write a C program to create a file and print the contents of the file.

[6M+6M]

(**OR)**

11) a) Write a program to create a file with some integers and read the numbers from the file to determine mean and standard deviation.
b) Explain about formatted file I/O and unformatted file I/O operations with syntaxes.

[8M+4M]