AR18

CODE: 18EST102 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, February-2022

PROGRAMMING FOR PROBLEM SOLVING

(Common to EEE, ME 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 are different types of operators available in C? Explain.	8M
	b)	What is associativity in evaluating the expression? Evaluate the following expression 30 * 80 / 40 % 40 * 50	4M
		(OR)	
2.	a)	Write a C-program to add two integer numbers and display the sum as a float value.	6M
	b)	Draw flowchart for finding maximum number among three numbers.	6M

UNIT-II

3.	a)	Explain else if ladder with the help of a flowchart.	7M
	b)	Write a C program to find the reverse of the given integer.	5M
		(OR)	
4.	a)	Explain the difference between while and do while with suitable example.	6M
	b)	Write a C program to check whether given number is prime or not and also use at least one if else condition and a for loop.	6M

UNIT-III

5.	a)	Explain C storage classes with suitable example.	6M
	b)	What is a string? Explain strcat() and strcmp() functions with suitable examples.	6M
		(OR)	
6.	a)	What is a two-dimensional array in C? Illustrate different ways to initialize 2-D arrays.	6M
	b)	Define function. Explain different types of functions.	6M

UNIT-IV

7.	a)	Define pointer. Give the syntax for pointer declaration and initialization.	6M
	b)	What is pointer to a function? Give the general syntax and program for the same.	6M
		(OR)	
8.	a)	Explain array of pointers with suitable example.	5M
	b)	Write a C program for swapping of two numbers using call-by-value and call-by-reference.	7M

UNIT-V

9.	a)	How does a structure differ from an array? Explain array of structures with a sample code.	6M
	b)	What is a file? Explain with an example program the working of file open and file close functions.	6M
		(OR)	
10.	a)	What is the similarity between structure and union? Explain with an example.	6M
	b)	Write a C program to copy contents of one file to another file.	6M

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AR18

CODE: 18ECT103 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, February-2022

ELECTRONIC CIRCUITS

(Electronics and Communication Engineering)

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)	With the help of a circuit diagram and wave forms explain the operation of a full wave rectifier.	8M
	b)	Explain the terms a) rectifier efficiency b) ripple factor c) TUF d) % regulation	4M
		(OR)	
2.		Derive the expression for average voltage and rms voltage of a half wave rectifier.	12M

UNIT-II

3.	a)	Describe in detail about what is a series inductor filter	8M
	b)	Give the comparison of filter circuits in terms of ripple factor	4M
		(OR)	
4.	a)	Derive the expression for ripple factor in L section filter	6M
	b)	Write in detail about transistor shunt regulator.	6M

UNIT-III

5.	a)	Explain the terms operating point and fixed bias	6M
	b)	Derive the expression for stability factor 'S'	6M
		(OR)	
6.		With the help of neat diagram explain compensation circuits	12M

UNIT-IV

7.		Draw and explain different transistor amplifier configurations.	12M
		(OR)	
8.	a)	Explain the h-parameter equivalent models of CB and CC configurations.	6M
	b)	Write the conversion formulas for the h-parameters of three transistor configurations.	6M

UNIT-V

9.	a)	Explain the concept of feed back in amplifiers	6M
	b)	Write about the four types of feed back amplifiers.	6M
		(OR)	
10.	a)	Write about the characteristics of negative feedback amplifiers.	6M
	b)	Write about the voltage shunt and current shunt feedback amplifiers	6M

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CODE: 18EST101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, February-2022

BASIC ELECTRICAL ENGINEERING

(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) Define the terms (a) EMF, (b) Current and (c) Resistance. **6M**
   b) Two coils connected in series have a resistance of 18 Ω and when connected in parallel have a resistance of 4 Ω. Find the value of resistances. **6M**

(OR)

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

UNIT-II

3. a) Define the terms (a) Alternating quantity, (b) Direct current and (c) Impedance **6M**
   b) An inductor of 0.1 H is connected in series with a resistor of 20 Ω. The circuit is connected across a 230 V, 50 Hz, single-phase supply. Find the circuit current, circuit power factor and voltage across the inductor. **6M**

(OR)

4. a) Define the terms (a) Active power, (b) Reactive power and (c) Apparent power. **6M**
   b) Develop the expressions for the circuit current, phase angle and power factor of an RC-series circuit. **6M**

UNIT-III

5. a) Develop the equation for EMF induced in a DC generator. **6M**
   b) With neat figures, explain the characteristics of DC shunt generator. **6M**

(OR)

6. a) Define torque. Develop the equation for torque developed in the armature of a DC motor. **4M**
   b) With a neat diagram, explain the operation of a three-point starter. **8M**

UNIT-IV

7. a) Explain the operation of a single-phase transformer with suitable diagram. **6M**
   b) Explain different types of losses that occur in a transformer. **6M**

(OR)

8. a) With suitable diagrams, explain the no-load testing and full-load testing of a single-phase transformer. **8M**
   b) A 3,300 V/250 V, 50 Hz, single-phase transformer is built on a core having an effective cross-sectional area of 125 cm^2 and 70 turns on the secondary side. Find the maximum flux density and number of primary winding turns. **4M**

UNIT-V

9. a) Explain the principle of operation of an induction motor with suitable diagram. **6M**
   b) With a neat diagram, explain how rotating magnetic field is produced in the air-gap of a three-phase induction motor. **6M**

(OR)

10. a) With neat diagrams, explain the constructional details of an induction motor. **8M**
    b) An induction motor having 8 poles runs on 50 Hz supply. If it operates on full-load at 720 revolutions per minute, evaluate the slip. **4M**

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AR16

CODE: 16EE1004 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, February-2022

BASIC ELECTRICAL &ELECTRONICS ENGINEERING

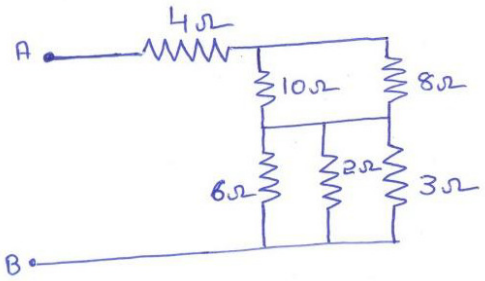
(Common to CE, CSE & IT branches)

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

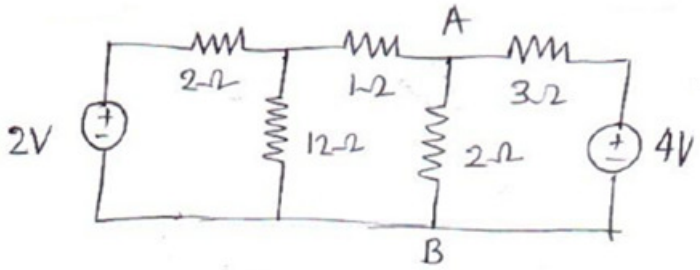
UNIT-I

1. a) Define the following terms 8M
   i) Lumped elements
   ii) Bilateral Elements
   iii) Active Network
   iv) linear elements
   b) In series-parallel circuit find the equivalent resistance between A and B. 6M



(OR)

2. a) Obtain the relationship between the Resistor, inductor and capacitor in terms various parameters 6M
   b) Obtain the currents in all elements and check for power balance 8M



UNIT-II

3. a) Explain the construction of a DC machine with a neat sketch 8M
   b) A 4 pole lap wound shunt generator has a shunt resistance of 100Ω and armature resistance of 0.1Ω and supplies 60 lamps each rated 40W at 200V. calculate the armature current , induced EMF and current in each parallel path of the armature. Allow the brush drop of 1V per brush 6M

(OR)

4. a) Derive the torque equation of DC motor 7M
   b) Explain how speed is controlled in a DC machine and what are the different methods explain in detail 7M

UNIT-III

5. a) Derive the EMF equation of transformer 5M
   b) An OC and SC test is performed on a 15KVA,450V/120V single phase transformer and the following is the tabulated data 9M
   OC Test: V = 120V, I= 4.2A and W = 80W with HV open
   SC Test: V = 9.65V, I = 22.2A and W = 120W with LV short
   Calculate the approximate equivalent circuit, efficiency at full load with 0.8 lag pf

(OR)

6. a) Derive the torque equation of three phase induction motor 7M
   b) A 415V, 50Hz, 4 pole three phase induction motor has star connected stator winding. The rotor resistance and reactance are 0.2Ω and 2Ω respectively. The full load speed is 1440 rpm. Calculate the torque developed on full load by the motor 7M
   Assume stator to rotor ratio 2:1

UNIT-IV

7. Explain the regulation of a Synchronous generator using synchronous impedance method with a neat circuit and corresponding equations 14M

(OR)

8. a) Explain the brief classification of instruments 7M
   b) What are the types of forces acting on the measuring instruments 7M

UNIT-V

9. a) Draw the VI characteristics of a PN junction diode and explain the internal structure of diode 7M
   b) Draw the input and output characteristics of CB configuration 7M

(OR)

10. a) Explain how transistor acts as an amplifier 7M
    b) Distinguish between the CE.CB and CC configuration on various parameters 7M

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AR16

CODE: 16CS1002 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, February-2022

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

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UNIT-I

1.	a	Define Algorithm. Explain time complexity analysis for the algorithm of finding roots of a quadratic equation	7M
	b	Define recursion. Explain linear recursion with an example	7M
		(OR)	
2.	a	Explain various types of data structures	7M
	b	Discuss about the design methodology of recursive algorithm	7M

UNIT-II

3.	a	Write the algorithm for Insertion sort. Explain it with example	7M
	b	Explain Merge Sort with an example	7M
		(OR)	
4.	a	Write the detailed passes for the data 11, 27, 8, 33, 25, 19, 15 using Bubble Sort	7M
	b	Calculate the time complexity for selection sort	7M

UNIT-III

5.	a	Describe array representation of Queue in detail.	7M
	b	Write the algorithm for Infix to Postfix conversion	7M
		(OR)	
6.	a	Write the algorithm for queue implementation	7M
	b	Describe one application stack	7M

UNIT-IV

7.	a	Write and explain any two demerits of linked lists	7M
	b	Explain how do you Represent a stack using linked list	7M
		(OR)	
8.	a	Write the algorithms for insert middle and insert front operations on Doubly linked lists	7M
	b	Explain deleting a specific node based on position	7M

UNIT-V

9.	a	Draw the binary tree from the in-order and pre-order traversals given as inorder sequence: D B E A F C Preorder sequence: A B D E C F	7M
	b	Define binary search trees. Give examples for both trees. What are the drawbacks with binary search trees.	7M
		(OR)	
10.	a	Explain different graph techniques.	7M
	b	Define graph. Explain traversal BFS for a sample graph	7M

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AR13

CODE: 13CS1001 **SET-1**

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

COMPUTER PROGRAMMING
(Common to EEE & ECE Branches)

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

PART-A

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

1. a) Define Keyword? List any 3 keywords
   b) What is the decrement operator?
   c) What is the need for loop statements?
   d) Describe the break statement.
   e) What is call-by-value?
   f) Define two-dimensional array.
   g) Define union.
   h) Write the example for the pointer to pointer.
   i) Define pre-processor.
   j) What is a binary file?

PART-B

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

UNIT-I

2. a) Define flowchart and explain different symbols of the flowchart. 6M
   b) Draw a flowchart to (i) find the maximum of three numbers (ii) sum and average of first N numbers. 6M

(OR)

3. a) Explain the structure of the C program with a neat diagram 8M
   b) What is a conditional operator? Give example. 4M

UNIT-II

4. a) Explain the nested if statement with syntax and flowchart 6M
   b) Write a C program to find the roots of a quadratic equation 6M

(OR)

5. a) Explain while loop with syntax and example 7M
   b) Write a C program to check whether a given number is prime or not 5M

UNIT-III

6. a) Explain storage classes with suitable examples. 8M
   b) Define recursion and give example. 4M

(OR)

7. a) Define Array. Explain one-dimensional array with example 7M
   b) Write a C program to calculate the sum and average of a list of N elements 5M

AR13

CODE: 13CS1001 SET-1

UNIT-IV

8.	a)	Explain the operations that can be performed on pointers	6M
	b)	Distinguish between structure and union.	6M
		(OR)	
9.	a)	Explain nested structure with example.	6M
	b)	Write a C program to define a student structure with roll number, name, marks of 5 subjects, and total marks. Read the student data from the input and calculate the total marks.	6M

UNIT-V

10.	a)	Explain about (i) ftell() (ii) fseek() functions.	6M
	b)	Write a C program to copy the content of one file into another.	6M
		(OR)	
11.	a)	Explain file opening and file closing with examples.	6M
	b)	Explain about (i) rewind() (ii) fscanf() (iii) fprintf() functions.	6M

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