AR18

CODE: 18EST102   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

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)	Write short notes on various input and output functions in C?	4M
	b)	What are problem solving steps in C and explain with examples?	8M

(OR)

2.	a)	Explain in detail about the various pre defined data types in C language?	6M
	b)	Define Algorithm and Flowchart? Also write an algorithm and flowchart for adding of two numbers?	6M

UNIT-II

3.	a)	Write a C program to perform arithmetic operations using SWITCH?	8M
	b)	Explain about else if ladder with an example?	4M

(OR)

4.	a)	Explain about a various branching statements in C?	6M
	b)	Write a C program to reverse a given number?	6M

UNIT-III

5.	a)	Write a C program to find subtraction of two matrices?	6M
	b)	What is recursion and write a c program to find a factorial of a given number?	6M

(OR)

6.	a)	Define an Array in C? Explain declaration and initialization of an array?	4M
	b)	Explain about various categories of functions with suitable example?	8M

UNIT-IV

7.	a)	Write a C program to swap two numbers using pointers?	8M
	b)	Write about declaration and initialization of pointer variables? Give suitable examples?	4M

(OR)

8.	a)	What is pointer? What are the uses of pointers in C?	3M
	b)	Write a 'C' program to illustrate the use of pointers in arithmetic operations?	9M

UNIT-V

9.	a)	Explain the importance of Self Referential Structure (SRS)?	4M
	b)	Define a File in C? Explain various types of files? Write the operations of file?	8M

(OR)

10.	a)	Define structure in C? How to declare and initialize a structure?	4M
	b)	Define a file in C? Discuss about random access functions in file?	8M

1 of 1

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AR18

CODE: 18EET101   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021
SWITCHING THEORY AND LOGIC DESIGN
(Electrical and Electronics 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) Convert the following hexadecimal numbers to decimal.   6 M
           i) A08F.EA   ii) 8E47.AB
    b) Represent decimal number 425.69 in the following codes.   6 M
           i) BCD   ii) Excess-3

(OR)

2. a) Convert the following   6 M
        a) $(2598.7675)_{10} = ( )_{16}$ b) $(4433)_5 = ( )_{10}$ c) $(378)_{10} = ( )_8$
    b) Convert the following binary numbers to Gray code.
           i)   101010110101   ii) 110110010   6 M
           iii) 100001

UNIT-II

3. a) Obtain the minimal POS expression for $F = \prod M(0,1,2,4,5,6,9,15,16,19,21)$ 6 M
    b) Draw the following expressions using logic gates.   6 M
           i) (A + B)(C + D)   ii) (A + C)(ABC + ACD)

(OR)

4. a) Reduce F(A,B,C,)=Σm(0,2,3,6) using K-map.   6 M
    b) Apply De Morgon's theorem to each of the following expressions.   6 M
           i) $\overline{P(Q+R)}$ ii) $\overline{(P+\overline{Q})(\overline{R}+S)}$

UNIT-III

5. a) Realize the operation of full adder using logic gates.   6 M
    b) Construct a full subtractor using AND-OR representation.   6 M

(OR)

6. a) Illustrate the function of Carry look ahead adder with neat diagrams.   6 M
    b) A majority function is generated in a combinational circuit when the output is equal to
        1 if the input variables have more 1's than 0's. The output is 0 otherwise. Design a 3   6 M
        input majority function.

UNIT-IV

7. a) If $A = A_1A_0 \, and \, B = B_1B_0$, design a logic circuit which specifies the magnitude of the
        given numbers.   6 M
    b) Signals A, B, C, D and D' are available. Using a single 8 to 1 multiplexer and no other
        gate, implement the Boolean function F(A, B,C, D) = BC + ABD' + A'C'D.   6 M

(OR)

8. a) Illustrate the working of 8 x 3 Encoder with neat diagram.   6 M
    b) Design 8:1multiplexer using gates.   6 M

UNIT-V

9.   a) Draw the circuit of D flip flop using gates and explain its operation.   6 M
     b) Illustrate the operation of JK flip-flop using NAND gates.   6 M

(OR)

10. a) Construct a BCD ripple counter using a 4-bit binary ripple counter that can be
         cleared asynchronously and an external NAND gate.   6 M
     b) Discuss the operation of Bidirectional Shift register with necessary diagrams.   6 M

AR18

CODE: 18EST104   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

ELEMENTS OF WORKSHOP TECHNOLOGY
(Mechanical 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)	What are 'primary' and 'secondary' operations. Explain.	6M
	b)	What are machining processes and what are they used for?	6M
		(OR)	
2.	a)	How do you classify the various manufacturing processes?	8M
	b)	Write short notes on interchangeability.	4M

UNIT-II

3.	a)	Give a neat sketch of firmer chisel and name its different parts.	8M
	b)	What is the difference between hard and soft wood?	4M
		(OR)	
4.	a)	Discuss briefly the various boring tools used in a carpentry tool.	8M
	b)	Give a neat sketch of rip saw and name its different parts.	4M

UNIT-III

5.	a)	Name and explain various types of files.	10M
	b)	Write short notes on sawing.	2M
		(OR)	
6.	a)	What is a bevel square and where it is used.	4M
	b)	Name and explain the use of different types of chisels used in fitting work giving their specification.	8M

UNIT-IV

7.	a)	What do you mean by stakes? Name the different types of stakes with sketches giving their uses.	9M
	b)	Write short notes on hand forming.	3M
		(OR)	
8.	a)	Which metals are commonly used in sheet metal work? Give a brief account of each.	8M
	b)	Write short notes on nibbling.	4M

UNIT-V

9.	a)	Why tongs are used. Explain with a neat sketch any three types of tongs.	8M
	b)	What are the common forging defects and what are they due to?	4M
		(OR)	
10.	a)	Explain with a neat sketch the use of swage block.	4M
	b)	Explain with a neat sketch drawing down and setting down and finishing operations.	8M

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AR18

CODE: 18ECT101   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

ELECTRONIC DEVICES
(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) Show that the Fermi energy level lies in the center of forbidden energy band for an intrinsic semiconductor.   6M
   b) Find the concentration of holes & electrons in the P-type silicon at 300^0K assuming its resistivity as 0.02Ω-cm, μ_p=475cm^2/vs, η_i=1.45×10^{10}/cm^3.   6M

(OR)

2. a) Describe the phenomenon of diffusion of charge carriers in semiconductors.   6M
   b) Define and explain the terms mobility and conductivity in a semiconductor.   6M

UNIT-II

3. a) With a neat diagram explain the working of an open circuited PN junction. Give necessary response curves.   6M
   b) Explain the static and dynamic resistances of a diodes..   6M

(OR)

4. a) Explain in detail the break down mechanisms in a diode.   6M
   b) Find the value of D.C resistance and a.c resistance of a Germanium junction diode, if the temperature is 25°C and I_O = 20 µA with an applied voltage of 0.1 V   6M

UNIT-III

5. a) With necessary diagram explain the output characteristics of CE configuration   6M
   b) Calculate the value of I_C and I_E for a transistor with α = 0.99 and I_{CBO} = 5 µA. I_B is measured as 20 µA.   6M

(OR)

6. a) What is meant by thermal run-away? Briefly explain.   6M
   b) A transistor has I_B=100 µA and I_C=2 mA. Find i) β ii) α iii) I_E iv) if I_B changes by +25 µA and I_C changes by +0.6 mA, find the new value of β.   6M

UNIT-IV

7. a) Compare BJT and JFET.   6M
   b) Construct n – channel JFET and explain in detail.   6M

(OR)

8. a) Explain the construction and working of Enhancement MOSFET.   6M
   b) prove that $\mu = g_m \times r_d$.   6M

UNIT-V

9. Describe the working principle of an SCR with V-I Characteristics.   12M

(OR)

10. a) Explain the construction and working of UJT.   6M
    b) With output characteristics explain the working of photo diode .   6M

1 of 1
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AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

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
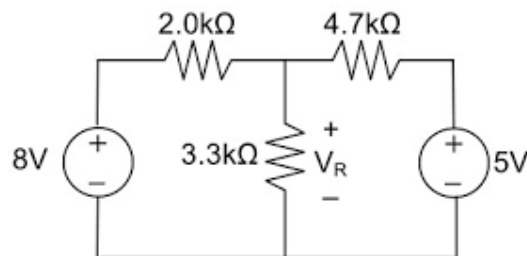All parts of the Question must be answered at one place

UNIT-I

1. a) Define i) Voltage ii) Current iii) Resistance iv) Charge v)   6M
Power vi) Network
   b) Find Current through 70Ω resistor   8M
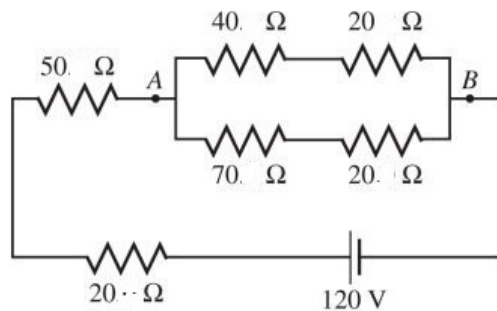
(OR)

2. a) Find V_R in the fig. Shown below.   7M

   b) Find R_{ab} in fig. shown below   7M
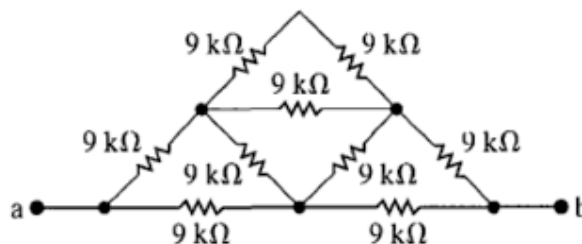
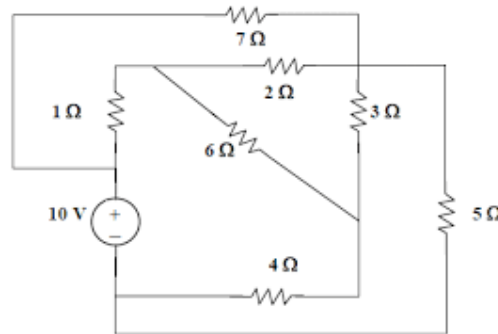# UNIT-II

3. a) Briefly explain Mesh and Nodal Analysis.   6M
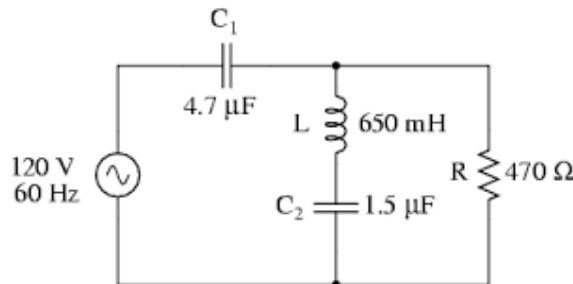   b) Find currents through each Resistor   8M
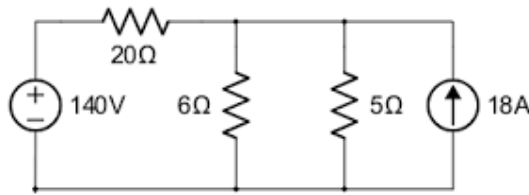
(OR)

4. a) Find Current through 3Ω Resistor   7M

   b) Define self and mutual inductance and Prove $M=K\sqrt{L1L2}$ 7M

UNIT-III

5. a) Define the following i) Time period ii) RMS value iii) Form   6M
   factor iv) Power factor of an alternating quantity.
   b) Find current through 470Ω Resistor.   8M

(OR)

6. a) A sine wave of v(t)=200sin50t is applied to a 10Ω resistor in   7M
   series with a coil. The reading of a voltmeter across the
   resistor is 120V and across the coil is 75V,Calculate the
   power and reactive volt-amperes in the coil and the power
   factor of the circuit.

   b) A Voltage of v(t)=100sin500t is applied across a series R-L-C   7M
   circuit where R=10 Ω L=0.05H and C=20μf. Determine the
   power supplied by the source, the reactive power supplied by
   the source, the reactive power of the capacitor, the reactive
   power of the inductor and the power factor of the circuit.

UNIT-IV

7. a) A series RLC circuit has a quality factor of 5 at 50rad/sec. the 6M
current flowing through the circuit at resonance is10A and the
supply voltage is100V. The total impedance of the circuit is
20Ω. Find the circuit constants.

   b) Define i) series resonance ii) resonance frequency 8M
   iii) bandwidth iv) quality factor

(OR)

8. a) Two impedances $Z_1=20+j10$ $Z_2=10-j30$ are connected in 7M
parallel and this connection is connected in series with
$Z_3=30+jX$. find the value of X which will produce resonance

   b) Find Current , Voltage drop and Power consumption across 7M
   1KΩ resistor.
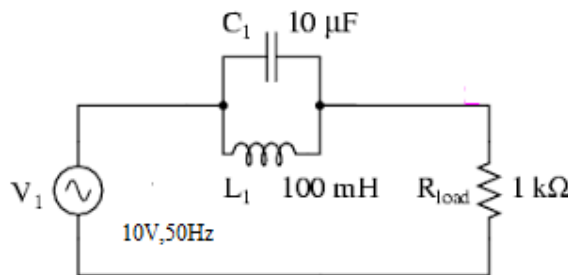
UNIT-V

9. a) Derive the relation between phase quantities and line 7M
quantities(both voltage and current) in Star connection

   b) A balanced Delta connected Load of $(2+3j)Ω$ per phase is 7M
connected to a balanced 3- phase 440V supply. The phase
current is 10A. find the i) total active power ii) reactive
power iii) Apparent power in the circuit

(OR)

10. a) Derive the relation between phase quantities and line 7M
quantities(both voltage and current) in Delta connection

   b) A three phase 4 wire symmetrical 440 volts RYB system 7M
supplies star connected load in which $Z_R=10∟0°$
$Z_Y=10∟26.8°$ $Z_B=10∟-26.8°$. Find the line current, the neutral
current and the load power

AR16

CODE: 16EE1002   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021
NETWORK ANALYSIS
(Electronics & Communication 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)	Explain with relevant equations, voltage division method?	7M
	b)	State and explain Kirchhoff's laws with example.	7M

(OR)

|			
2.	a)	What are the different energy sources?	7M
	b)	Find the inductance of a coil in which current increases linearly from 0 to 0.2A in 0.3s, producing a voltage of 15V.	7M

UNIT-II

3.	Develop the equations for star to delta transformation when the resistances connected in star are R_A, R_B, R_C.	14M

(OR)

4.	Explain	14M

     i. Instantaneous value
     ii. Peak value
     iii. Average value
     iv. RMS value
     v. Peak factor
     vi. Form factor
     vii. Peak to peak value

UNIT-III

5.	a)	Explain with phasor diagram series RLC circuit and determine the phase angle and equivalent impedance.	7M
	b)	A 50 ohms resistor is connected in parallel with an inductive reactance of 30 ohms. A 20V signal is applied to the circuit. Find the total impedance and line current in the circuit?	7M

(OR)

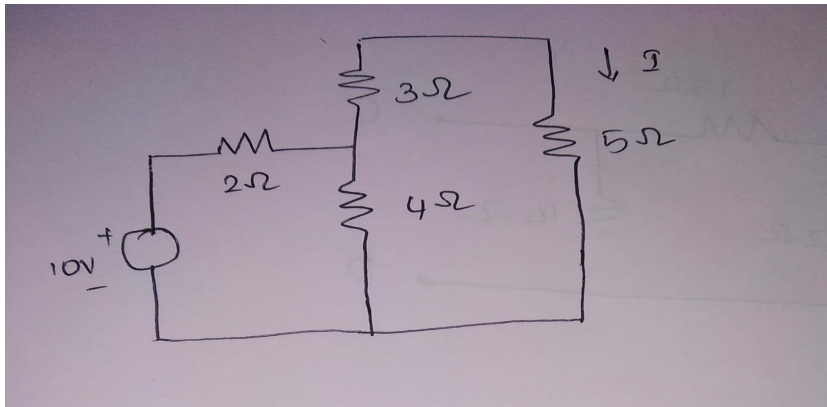|		
6.	Develop the expression for Q-factor of parallel resonance circuit.	14M

UNIT-IV

7. a) State and explain maximum power transfer theorem?   7M
    b) Use thevinins theorem to find the current through 3 ohms resistor?   7M
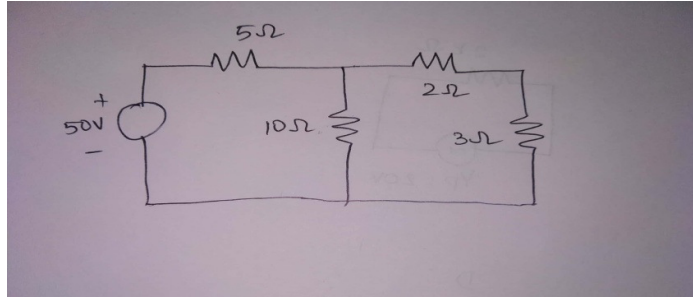
**(OR)**

8. a) State and explain Superposition theorem?   7M
    b) Verify reciprocity theorem for the circuit given below?   7M

UNIT-V

9.   Develop the relationship of Z-parameters in terms of Y-parameters.   14M

(OR)

10.   For the circuit shown in below figure determine the current when the switch is   14M
        moved from position1 to position 2 at t=0. The switch was in position1 for a long
        time to get steady state values.
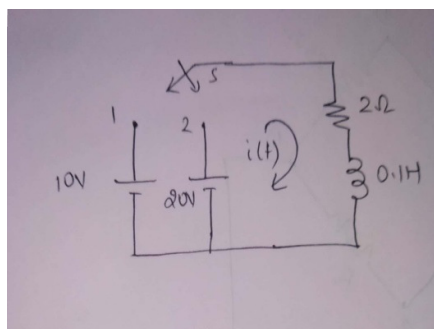
AR16

CODE: 16CS1001   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech I Semester Supplementary Examinations, April-2021

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)	Differentiate low level languages and High level languages	7M
	b)	Write a C program to find given number is even or odd using conditional operator	7M

(OR)

2.	a)	Explain structure of C program with an example	7M
	b)	What is an algorithm? Write an algorithm to find sum of natural numbers upto n	7M

UNIT-II

3.	a)	Explain with a sample program about while, for and do-while statements in C programming.	7M
	b)	Write a C program to find maximum of three numbers using nested if statememt	7M

(OR)

4.	a)	Write a C program to find whether given number is Armstrong or not	7M
	b)	Discuss about selection statements with examples.	7M

UNIT-III

5.	a)	Explain about Storage classes in C	7M
	b)	Write a program to find transpose of given matrix	7M

(OR)

6.	a)	Define Array. What are the advantages of using array? How two dimensional are declared and accessed?	7M
	b)	Write a C program to find factorial of a number using recursion	7M

UNIT-IV

7.	a)	Write about definition, declaration, accessing of structure members with suitable examples	7M
	b)	Explain about dynamic memory allocation with suitable example	7M

(OR)

8.	a)	Write a C program to declare structure template of an entity pen (name, colour, cost).Read information about 10 pens. Print all of them	7M
	b)	Write about pointers as function arguments with suitable examples	7M

UNIT-V

9.	a)	Construct a program to count the number of characters in a text file	7M
	b)	Define file .Explain any five operations on files	7M

(OR)

10.	a)	Write a program to merge two files into single file.	7M
	b)	Write about input and output operations on files with suitable examples.	7M

1 of 1
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AR13

PART-A

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

1. a) Define data type and List out the different data types.
   b) What is an incremental operator?
   c) Write the syntax of the if-else statement.
   d) Describe the continue statement.
   e) Define array with example.
   f) Write the syntax of srtcat() function.
   g) Define employee structure with number, name, and salary.
   h) What is pointer to pointer?
   i) What is the need for a file?
   j) Write the syntax of fgetc() function.

PART-B

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

UNIT-I

2. a) Define Algorithm and explain the properties of an algorithm   6M
   b) Write an algorithm to check whether a given number is palindrome or not   6M

(OR)

3. a) Explain different types of operators with examples.   8M
   b) Explain (i) getchar()   (ii) putchar()   4M

UNIT-II

4. a) Explain the switch-case statement with syntax and flowchart   6M
   b) Write a program to implement arithmetical operations using switch-case   6M

(OR)

5. a) Explain for loop with suitable example   6M
   b) Distinguish between while and do-while statements   6M

UNIT-III

6. a) Explain call-by-value and call-by-reference with suitable examples.   8M
   b) Explain (i) strcpy() (ii) strrev() functions with example   4M

(OR)

7. a) Explain the two-dimensional array in detail   5M
   b) Write a C program to find the multiplication of two matrices   7M

AR13

UNIT-IV

8. a) Explain dynamic memory allocation functions with suitable example   8M
    b) Distinguish between structure and union   4M

(OR)

9. a) Define the structure and explain the nested structure with a suitable example.   7M
    b) Explain the initialization of the structure   5M

UNIT-V

10. a) Explain (i) rewind() (ii) ftell() (iii) fseek() functions with example.   9M
    b) Explain about binary files.   3M

(OR)

11. a) Explain about file opening and file closing with example   6M
    b) Write a C program to merge the contents of two files into a third file.   6M

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