AR20

CODE: 20ESI102 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, September, 2023

Programming for Problem Solving

(Common to CIVIL, EEE & 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)	Explain the basic structure of a C program with an example	5M
	b)	Write a C program to find the area of triangle when we know the lengths of all three of its sides.	5M
		(OR)	
2.	a)	What is an operator? List and explain various types of operators	5M
	b)	Write a C program in C to find the area and perimeter of a rectangle	5M

UNIT-II

3.	a)	List the differences between while loop and do-while loop.	5M
	b)	Explain with syntax ,if, if-else and nested if-else statements in „C" program	5M
		(OR)	
4.	a)	Explain switch statement with syntax and example	5M
	b)	Write a C program that takes three coefficients (a, b, and c) of a quadratic equation ; (ax^2+bx+c) as input and compute all possible roots and print them with appropriate messages.	5M

UNIT-III

5.	a)	What is array? Explain the declaration and initialization of one dimensional and two dimensional array with an example.	5M
	b)	Write a C program to find the largest element in an array	5M
		(OR)	
6.	a)	Define string. How string is declared and initialized? Explain string input/output functions with an example.	5M
	b)	Write a C program to find the transpose of a given matrix	5M

UNIT-IV

7.	a)	What is function? Explain the difference between user defined and library Functions.	5M
	b)	Write a C program to check a number is a prime or not using recursion	5M
		(OR)	
8.	a)	Explain string manipulation library functions with their syntaxes	5M
	b)	Explain recursion. and write a program to find n^{th} term of Fibonacci series	5M

UNIT-V

9.	a)	What is structure? Explain the C syntax of structure declaration with example	5M
	b)	Write a C program to demonstrate example of Nested Structure	5M
		(OR)	
10.	a)	Explain array of structure and structure within a structure with an example	5M
	b)	Write a C Program to add two distances in inch-feet system using Structure	5M

UNIT-VI

11.	a)	Write a C program to copy the content from one file to another file	5M
	b)	Explain any five preprocessor directives in C	5M
		(OR)	
12.	a)	Define a file and elaborately discuss about reading, opening and closing of a file.	5M
	b)	What is preprocessor directive? Explain #define and #include preprocessor directives	5M

AR20

CODE: 20EST101 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, September, 2023

BASIC ELECTRICAL ENGINEERING

(Common to ME, CSE, CSD, AIML & IT Branches)

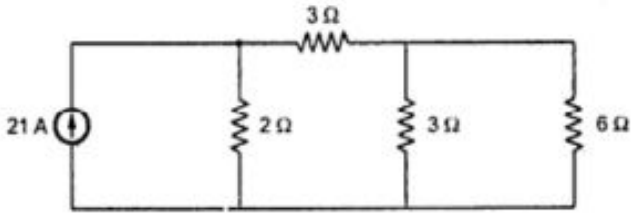
Time: 3 Hours **Max Marks: 60**

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) Describe clearly about voltage and current sources and also compare the characteristics of ideal voltage and current source with practical voltage and current source. 4M

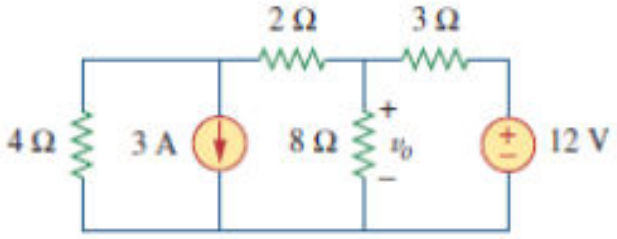
b) 6M



For the circuit shown in the Fig. determine the current through 6Ω Resistor

(OR

2. a) 6M



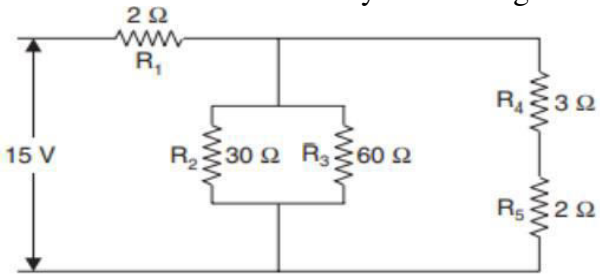
Find V_0 in the circuit using source transformation

b) State and Explain Kirchhoff's Laws with Suitable example. 4M

UNIT-II

3. a) Explain star delta transformation with necessary circuit diagram 5M

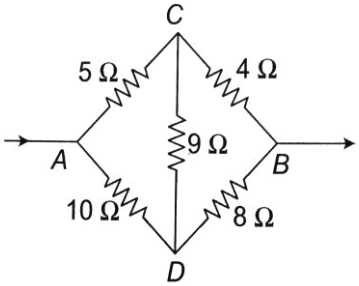
b) 5M



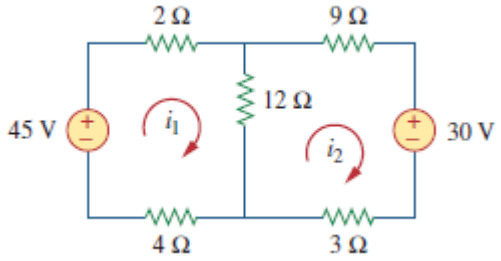
Calculate the equivalent resistance of the circuit shown

(OR)

4. a) Find the equivalent resistance of the network 5M



b) Calculate current i_1 and i_2 in the circuit shown 5M



UNIT-III

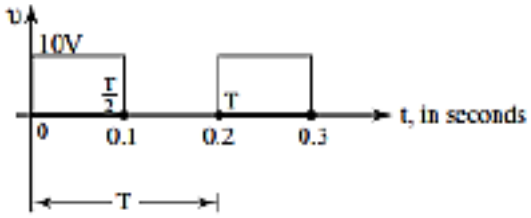
5. a) Explain the following of alternating quantity 5M
(i) Peak Value (ii) Average Value (iii) RMS value

b) A 200 Volt, 50HZ inductive circuit takes a current of 10 a, lagging 30^0 5M
Find the (i) Resistance (ii) Reactance and (iii) inductance

(OR)

6. a) Find the average and RMS value of (i) half wave rectified and (ii) full wave rectified voltage 4M

b) 6M



Calculate the RMS value, average value and form factor of a half-rectified square voltage shown in Figure

UNIT-IV

7. a) Define the following 4M
Reluctance, Magneto motive force , magnetic field intensity, magnetic permeability and susceptibility

b) Compare between electric and magnetic circuit 6M

(OR)

8. a) Explain parallel magnetic circuit with diagram. 5M

b) Explain magnetic circuit with air gap consisting of an exciting coil of N turn and carrying current of i amp. Derive the equation of reluctance. 5M

UNIT-V

9. a) Explain the working principle of DC generator and derive the EMF equation 5M

b) Explain different types of DC generators with circuit diagram 5M

(OR)

10. a) A six pole lap connected DC generator has flux/pole of 0.045 Wb. If the EMF induced is 300Volt at 400 RPM find the numbers of conductors. 5M

b) Explain magnetization characteristics of a DC shunt generators 5M

UNIT-VI

11. a) Derive the torque equation of a DC motor 5M

b) Determine the torque developed when a current of a 30Amp passes through the armature of a motor with following details 5M
Lap winding, 310 Conductors, 4 pole, Flux/pole= 0.19Wb

(OR)

12. a) Explain the speed control of DC shunt motor by varying flux control method. 5M

b) Explain the speed control of DC series motor by tapped field control 5M

AR18

CODE: 18ECT103 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, September, 2023

ELECTRONIC CIRCUITS

(ELECTRONIS 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)	Explain the operation of Half Wave Rectifier with neat diagram and derive the expression for I_{DC} , I_{rms}, ripple factor, and PIV	6M
	b)	Explain how diode acts as rectifier. Derive the expression for efficiency in FWR	6M
		(OR)	
2.	a)	Derive the following parameters of FWR i) I_{DC}, ii) E_{DC}, iii) I_{RMS}, and iv) Efficiency	6M
	b)	Compare half wave and Full wave Rectifiers	6M

UNIT-II

3.	a)	Draw the circuit diagram of π -section filter and derive the expression for ripple factor.	6M
	b)	Explain the Transistor shunt regulator	6M
		(OR)	
4.		Discuss the working of Capacitive, Inductive and π-section filters.	12M

UNIT-III

5.	a)	Explain the DC analysis of self bias circuit	6M
	b)	Explain the collector to base bias with neat sketch	6M
		(OR)	
6.	a)	Explain various FET biasing methods	6M
	b)	Draw a BJT fixed bias circuit and derive the quiescent points	6M

UNIT-IV

7.	a)	Derive the expression for 'hre' in terms of CB h-parameters .	6M
	b)	Determine the h-parameters from input and output characteristics	6M
		(OR)	
8.	a)	Draw the simplified hybrid model for the CC circuit and derive the expressions for A_I, R_i .	6M
	b)	Draw the h-parameter equivalent models for CE, CB and CC configurations	6M

UNIT-V

9.	a)	Explain about the current series feedback amplifier	6M
	b)	A voltage series negative feedback amplifier has a voltage gain without feedback of A = 500, input resistance Ri = 3kΩ, output resistance R0 = 20kΩ and feedback ratio, β = 0.01. Calculate the voltage gain Af, input resistance Rif, and output resistance Rof of the amplifier.	6M
		(OR)	
10.	a)	Explain about the effect of feedback on input and output resistances	6M
	b)	List the characteristics of negative feedback amplifiers.	6M

AR18

CODE: 18EST101 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, September, 2023

Basic Electrical Engineering

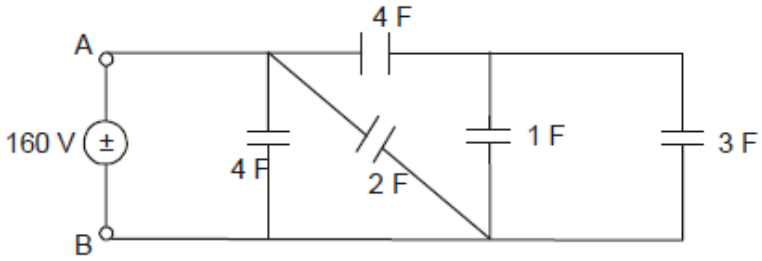
(Common to CE, CSE & IT Branches)

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

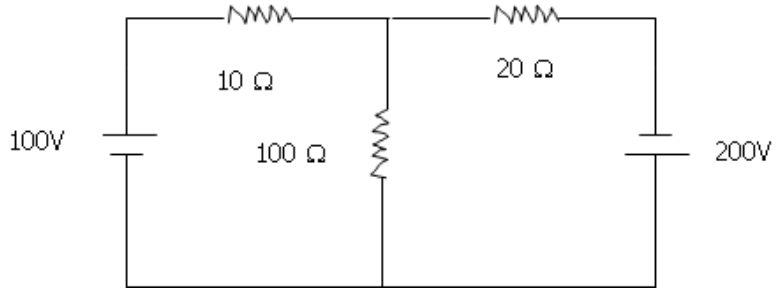
1. a) Interpret the equivalent capacitance between the terminals A and B 4M



b) Find out the equivalent inductance when 'n' of inductors are connected in i) series and ii) Parallel 8M

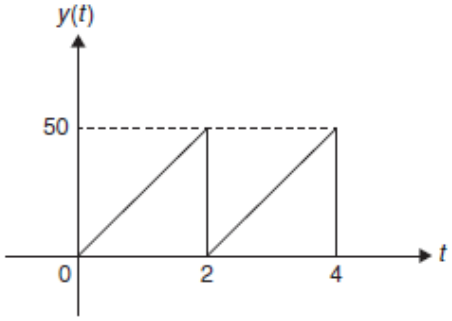
(OR)

2. a) Derive transformation formula for star-delta conversion equations 6M
b) For the network shown in fig. calculate the current in 100ohms resistor by using KVL. 6M



UNIT-II

3. a) Define Real power, Reactive power, Apparent power, Power factor. 4M
b) Find the average and effective values, form factor and peak factor of the saw-tooth waveform as shown in figure. 8M



(OR)

4.		Determine current passing through RLC series circuit for supply voltage of $v=v_m\sin\omega t$ using sinusoidal analysis and also draw phasor diagrams.	12 M

UNIT-III

5.	a)	Explain the construction of a DC Machine.	6M
	b)	Derive EMF equation of a DC Generator.	6M
		(OR)	
6.	a)	Explain speed control Methods of DC Motors	6M
	b)	Explain the Operation of 3-point starter with neat diagram.	6M

UNIT-IV

7.	a)	Explain the principle & operation of single-phase transformer.	6M
	b)	Derive the EMF equation of a Transformer	6M
		(OR)	
8.		Explain OC and SC Test of a Transformer with neat circuit diagram.	12M

UNIT-V

9.	a)	Explain the Principle of Operation of 3-Φ induction motor.	6M
	b)	Determine the synchronous speed and slip of a 4 pole, 3-phase, 50Hz induction motor speed of 1470 rpm.	6M
		(OR)	
10.	a)	Derive the power and Torque equation of a 3-phase Induction Motor.	6M
	b)	Explain the Speed-Torque characteristics of 3-phase Induction Motor.	6M

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AR18

CODE: 18EST102 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.Tech II Semester Supplementary Examinations, September, 2023
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)	Explain about the basic data types in c language with example	6M
	b)	Write the importance of precedence and associativity? write the table for operator precedence.	6M
		(OR)	
2.	a)	Describe procedure for creating and running C programs using algorithmic approach.	6M
	b)	Write an algorithm to generate the first 'N' numbers of a Fibonacci Series.	6M

UNIT-II

3.	a)	Differentiate between if statement and if-else statement with suitable examples and proper syntax.	6M
	b)	Write a program to check whether a given integer is odd or even.	6M
		(OR)	
4.	a)	Explain the do-while loop in detail.	6M
	b)	Write a program to add numbers until the user enters zero using do-while loop.	6M

UNIT-III

5.	a)	What is recursion? Differentiate between recursion with iteration.	6M
	b)	Write program for finding the GCD among two numbers using recursion.	6M
		(OR)	
6.	a)	What is a multi-dimensional array? How to declare it? How to access elements of multi dimensional arrays?	6M
	b)	Write a program using pointers to compute the sum of all elements stored in an array.	6M

UNIT-IV

7.	a)	What is dynamic memory allocation? Explain different dynamic memory management functions available in C.	6M
	b)	What is a pointer? Explain how the pointer variable declared and initialized.	6M
		(OR)	
8.	a)	What is a pointer? Explain the process of accessing a variable through its pointer with an example.	6M
	b)	Write a C program to swap two numbers using pointers.	6M

UNIT-V

9.	a)	What is structure? Explain array of structures with example	6M
	b)	How structure is declared and initialized? Explain with an example.	6M
		(OR)	
10.	a)	Discuss in details about various modes of operating a file.	6M
	b)	Write a 'C' program to count the number of characters in a file.	6M

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AR16

CODE: 16EE1004 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

I B.Tech II Semester Supplementary Examinations, September, 2023

Basic Electrical &Electronics Engineering

(Common to CIVIL & ME Branches)

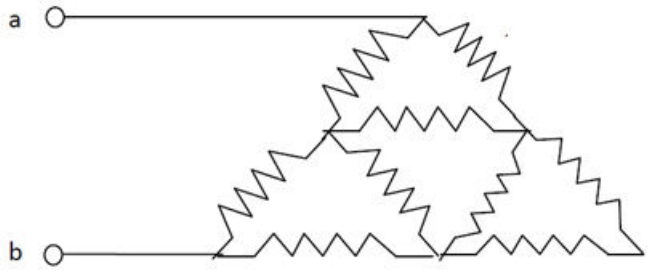
Time: 3 Hours **Max Marks: 70**

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) Define the following terms 4M
   i) Unilateral element
   ii) Distributed network
   iii) Passive network
   iv) Independent source

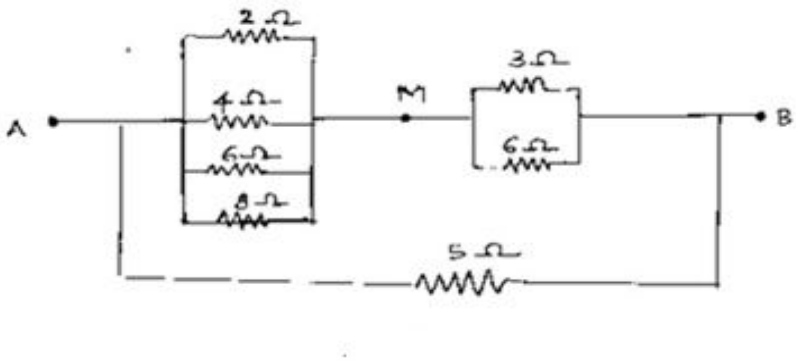
   b) Find the equivalent resistance R_{ab} for the circuit shown below. All the resistor values are 1Ω 10M



(OR)

2. a) State Kirchhoff's laws 4M

   b) If 20 V be applied across AB shown below , calculate the total current, the power dissipated in 4 Ω resistor and 3 Ω resistor 10M



UNIT-II

3. a) Derive the EMF equation of A DC machine 5M
   b) A compound generator delivers a load current of 50A at 500V. the armature resistance is 0.05Ω , series field resistance is 0.03Ω and shunt field resistance is 250Ω. Find the induced EMF if contact drop is 1V per brush. Neglect armature reaction. Assume i) long shunt and ii) short shunt connection 9M

(OR)

4. a) Describe how a DC shunt generator develops EMF with a neat sketch and equations 7M
   b) What is the necessity of starter and describe how 3 point starter operates with a neat sketch 7M

UNIT-III

5. a) What are the different losses found in a transformer and explain what are the tests that are to be performed on a transformer to know the losses with a neat sketch and equations 7M
   b) The primary and secondary winding resistances of a 40KVA 6600KV/25V single phase transformer are 10Ω and 0.02Ω respectively. The equivalent leakage reactance as referred to the primary windings is 55Ω. Find the full load regulation for pf of 0.8 lag and lead 7M

(OR)

6. a) Describe the operation of three phase induction motor 7M
   b) Explain the torque slip characteristics of three phase induction motor 7M

UNIT-IV

7. a) Derive the EMF equation of alternator 7M
   b) Describe various types of alternators in detail 7M

(OR)

8. a) Describe the PMMC type of instrument in detail with a neat sketch 7M
   b) Describe the MI type of instrument in detail with a neat sketch 7M

UNIT-V

9. a) Explain the full and half wave rectifier in detail 7M
   b) Explain the forward bias and reverse bias condition of a diode. 7M

(OR)

10. a) Explain the CB configuration with various characteristics and sketches 7M
    b) Explain the dc load line of a transistor in detail 7M

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