

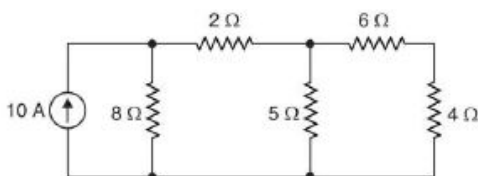
Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

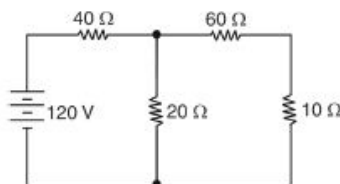
UNIT-I

1. a) Explain Kirchhoff's Laws with examples 5M
b) Find the current in the various branches of the circuit 5M

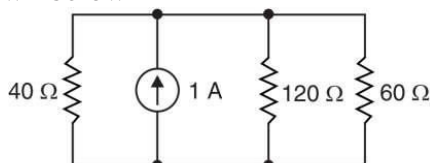


(OR)

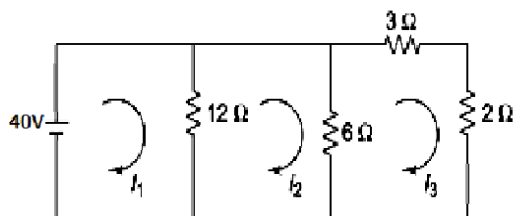
2. a) Determine the Power delivered by the 120 Volt source 5M



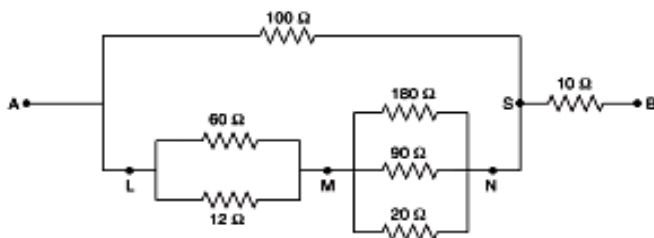
- b) By performing an appropriate source conversion, find the voltage across 120 Ω resistor in the circuit shown below 5M

UNIT-II

3. a) Determine the current in all the branches of the network shown in below network using loop analysis 5M

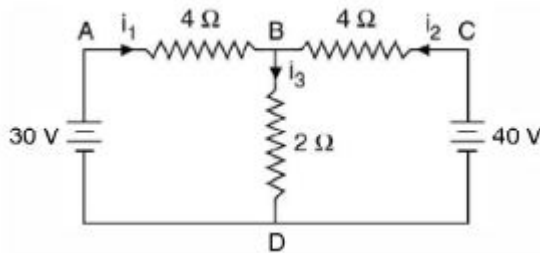


- b) Find the equivalent resistance of the network 5M



(OR)

4. a) Explain Star-Delta Transformation with circuit diagram 5M
 b) Determine the current in the branches of the network shown in below figure using nodal analysis 5M



UNIT-III

5. a) Draw and explain the phasor diagram of R-L and R-C circuit with sinusoidal excitation. 5M
 b) Explain real power, reactive power, apparent power, power factor of an inductive circuit 5M

(OR)

6. a) Explain average and RMS value of sinusoidal current 4M
 b) A pure resistance of 75Ω is connected in series with a pure inductance of 318mH . The circuit is supplied from 150 volt, 50Hz AC. Calculate (i) inductive reactance (ii) Impedance of the circuit and (iii) current 6M

UNIT-IV

7. a) Comparison between magnetic and electrical circuits 5M
 b) Derive the expression for equivalent inductance when two inductors connected in series aiding and series opposing. 5M

(OR)

8. a) Derive the expression coefficient of coupling. 4M
 b) Derive the expression for equivalent inductance when two inductors connected in parallel aiding and parallel opposing. 6M

UNIT-V

9. a) Discuss the constructional details of a DC machine with neat diagram 5M
 b) Derive the EMF equation of DC generator 5M

(OR)

10. a) Explain open circuit characteristics of DC shunt generator 5M
 b) Explain internal and external characteristics of shunt generator 5M

UNIT-VI

11. a) Explain the working principle of DC motor and derive the torque equation of dc motor. 5M
 b) Explain speed control of DC shunt motor by varying armature circuit resistance 5M

(OR)

12. Explain working principle of 3 point starter with neat diagram 10M

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 block structure of a C program 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) Explain any five operators used in C language 6M
- b) Write a C program in C to find the area and perimeter of a circle. 4M

UNIT-II

3. a) Explain switch statement with syntax and example. 5M
- b) Write a program in C to find the sum of „n“ natural numbers without using any loops 5M

(OR)

4. a) List the differences between while loop and do-while loop. 5M
- b) Write a C program to find sum of Natural numbers from 1 to N using “for” loop 5M

UNIT-III

5. a) Define array. Explain with suitable example how to declare and initialize 1D array 5M
- b) Write a C program to find the largest of two numbers in a given array 5M

(OR)

6. a) What is pointer ? Explain how the pointer variable declared and initialized? 5M
- b) Write a C program to find the sum and mean of all elements in an array using pointer 5M

UNIT-IV

7. a) What is function? Write a function to find the sum of two numbers 5M
- b) Write a c-program using function to check whether the given number is prime or not. 5M

(OR)

8. a) What is Recursion? Write a C program to compute factorial of a given number using recursion 5M
- b) Write a program to find GCD of two numbers using concept of functions 5M

UNIT-V

9. a) What is structure? Explain the C syntax of structure declaration with example 5M
- b) With an example program explain array of structures 5M

(OR)

10. a) Explain the difference between array and structures 5M
- b) Write a C program to demonstrate example of structure pointer 5M

UNIT-VI

11. a) Write a C program to copy contents of the one file to another using file handling. 5M
- b) Explain in detail preprocessor directives in C 5M

(OR)

12. a) Explain about i)ftell() ii)fseek() 5M
- b) What is preprocessor directive? Explain #define and #include preprocessor directives. 5M

AR18

CODE: 18EST102

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

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

**Programming for Problem Solving
(Common to EEE, MECH 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 components of a computer system with a neat sketch. 6M
b) What are the symbols used in flowchart? Draw a flowchart to check whether the given number is armstrong or not? 6M

(OR)

2. a) Explain about relational, increment and decrement operators with examples. 6M
b) Define data type. Explain in detail about the various data types in C language. 6M

UNIT-II

3. a) Write general form of any two decision statements with examples. 6M
b) Write a C program to print first N prime numbers. 6M

(OR)

4. a) Write about general form of for loop with suitable example. 6M
b) Write a C program to print factors of a given number. 6M

UNIT-III

5. a) How to perform matrix operations using arrays with examples. 6M
b) Define recursion and write a C program to find GCD of two given numbers using recursion. 6M

(OR)

6. a) Write about Two-dimensional array to functions with example program. 6M
b) List and explain about storage classes in C. 6M

UNIT-IV

7. a) Explain about Dynamic Memory Allocation functions with general forms and examples. 6M
b) Write a C program to read and display single dimensional array using pointer. 6M

(OR)

8. a) Write about declaration and initialization of pointer variables. Write a C program to swap two elements using call by reference. 6M
b) Write a C program to find the sum and average of list of elements using Dynamic Memory Allocation. 6M

UNIT-V

9. a) What is a pointer to structure? Explain how the structure elements are accessed using the pointer with examples. 6M
b) Write a C program to illustrate array of structures. 6M

(OR)

10. a) Explain about Random access file functions with syntax and examples. 6M
b) Write a C program to copy the contents of one file to another file. 6M

AR18

CODE: 18EST101

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

I B.Tech II Semester Regular/Supplementary Examinations, July, 2023

**Basic Electrical Engineering
(Common to Civil, CSE, IT Branches)**

Time: 3 Hours

Max Marks: 60

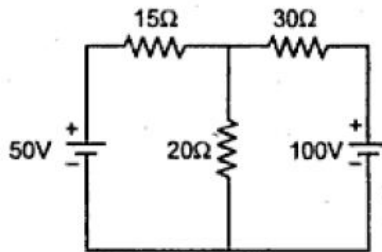
Answer ONE Question from each Unit

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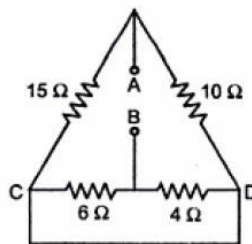
UNIT-I

1. a) State and Explain Kirchhoff's laws with example. 4M
- b) Using Kirchhoff's laws determine currents in all branches in the following circuit 8M



(OR)

2. a) Derive the expressions for star to delta and delta to star conversion. 8M
- b) Determine the equivalent resistance between terminals A,B. 4M



UNIT-II

3. a) The mathematical expression for the instantaneous value of an alternating current is $i = 7.071 \sin \left(157.08t - \frac{\pi}{4} \right)$ Find the RMS value, Average value, Time period and the time instant at which peak value is occurred. 6M
- b) Determine Average value, RMS value and Form factor for the half wave rectifier with sinusoidal input. 6M

(OR)

4. a) Determine current passing through RL series circuit for 6M
supply voltage of $v = V_m \sin \omega t$ using sinusoidal analysis
and also draw phasor diagrams
- b) A sinusoidal current of 25Hz has a maximum value of 6M
100A. calculate the time at which the current attain a
value of 20A and 50A, starting from zero.

UNIT-III

5. a) Classify different types of DC generators. 8M
- b) A 4-pole machine running at 1500 rpm has an armature 4M
with 90 slots and 6 conductors per slot. The flux per pole
is 60 mWb. Determine the induced EMF, if the machines
is connected in lap winding.

(OR)

6. a) Derive the torque equation of a DC motor. 6M
- b) Explain the speed control of DC shunt motor with 6M
diagram.

UNIT-IV

7. a) Explain the principle of operation of transformer. 6M
- b) The following readings were obtained from O.C. and 6M
S.C. tests on 8 kVA 400/120V, 50-Hz transformer. O.C.
Test: (l.v. side) : 120 V; 4 A; 75 W. S.C. Test: (h.v.side) :
9.5 V; 20 A; 110W. Determine Voltage regulation and
efficiency at 0.8 power factor lagging.

(OR)

8. a) Derive the emf equation of a transformer. 6M
- b) Explain various losses in Dc machines in detail. 6M

UNIT-V

9. a) Explain the principle of operation of 3-phase induction 6M
motor.
- b) A three phase, 50 Hz, 4 pole slip ring induction motor 6M
has a star connected rotor. The full load speed of the
motor is 1460 rpm. Determine the synchronous speed of
the stator flux, slip and the rotor frequency.

(OR)

10. a) Explain the speed torque characteristics of 3-phase 6M
induction motor.
- b) Derive the expressions for torque and speed of a 3- 6M
phase induction motor.

**ELECTRONIC CIRCUITS
(ELECTRONIS AND COMMUNICATION ENGINEERING)****Time: 3 Hours****Max Marks: 60**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

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UNIT-I

1. a) A HWR has a load of $3.5k\Omega$. If the diode resistance and secondary coil resistance together have a resistance of 800Ω and the input voltage has a signal voltage of a peak Value of a peak voltage $240v$. Calculate the rectification efficiency. 6M
- b) Explain the operation of Full Wave Rectifier using centre tapped transformer with neat diagram and derive the expression for I_{DC} , I_{rms} , and ripple factor. 6M

(OR)

2. a) Draw the circuit diagram of half wave rectifier and explain its operation with the help of waveforms. 6M
- b) Full wave rectifier uses for ideal diodes having forward resistance of 50 ohms each, source resistance $R_s=50\Omega$ and voltage 50V rms. Determine D.C output voltage and ripple factor 6M

UNIT-II

3. a) Explain about the operation of half wave and Full wave rectifier with capacitor filter and derive the expression for ripple factor? 6M
- b) Explain how Zener diode acts as voltage regulator 6M

(OR)

4. a) Explain the operation of half wave rectifier with inductor filter and derive the expression for ripple factor? 6M
- b) Explain the Transistor Series regulator. 6M

UNIT-III

5. a) Explain thermal runaway and stabilization techniques 6M
- b) Explain the thermistor and sensistor compensation circuits. 6M

(OR)

6. Draw a BJT fixed bias circuit and derive the expression for the stability factor 'S' 12M

UNIT-IV

7. a) Compare various types of transistor amplifier configurations. 6M
- b) Draw the circuit diagram of emitter follower and explain its operation. Derive the current gain. 6M

(OR)

8. Draw the h parameter equivalent circuit for a common Emitter configuration and derive expression for current gain, Voltage gain, Input impedance and output impedance. 12M

UNIT-V

9. a) Explain the basic concept of Feedback in amplifier with suitable block diagram 6M
- b) An amplifier has voltage gain with feedback of 100. If the gain without feedback changes by 20% and the gain with feedback should not vary by more than 2%, determine the value of open-loop gain, A and feedback ratio, β . 6M

(OR)

10. a) Explain about the voltage shunt feedback amplifier 6M
- b) Explain Feedback amplifier topologies with necessary diagrams. 6M

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

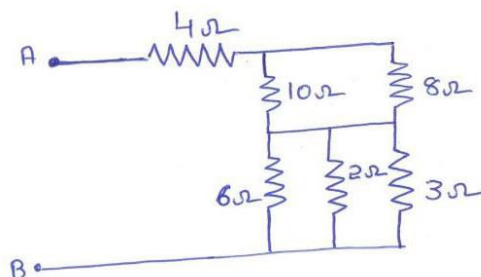
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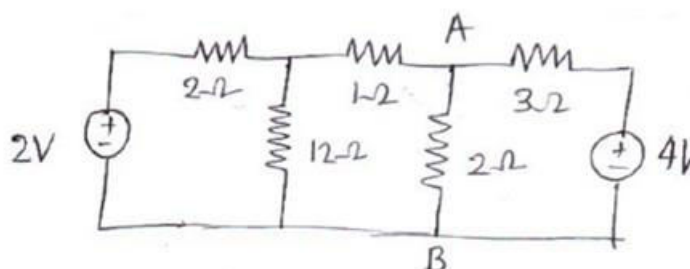
UNIT-I

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 of 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 9M
and the following is the tabulated data
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