

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 typical steps for entering, compiling and executing a C program 5M  
b) Write an algorithm to find HCF of two positive integer numbers 5M
- (OR)
2. a) Define variable. List the rules for declaring variable. Give valid and invalid examples 5M  
b) Define flow chart? Draw a flow chart to find the sum of first n integer numbers 5M

**UNIT-II**

3. a) Distinguish between all loop statements along with a flowchart and with an example program 5M  
b) Explain about switch statement. What is the importance of break and continue in switch statement? Give examples. 5M
- (OR)
4. a) What is a loop? Explain different statements in C with example. 5M  
b) Explain in details about multi-way selection statements with example. 5M

**UNIT-III**

5. a) What is a multidimensional array? Explain how a multidimensional array is defined in terms of a pointer to a collection of contiguous arrays of lower dimensionality 5M  
b) What is an array? What are the disadvantages in implementing arrays in C language? Discuss problems for implementing of multi-dimensional arrays in C language. 5M
- (OR)
6. a) Write a C program to find the biggest number and smallest number of given 'n' numbers using arrays 5M  
b) Define pointer. Explain pointer to pointer with an example program. 5M

**UNIT-IV**

7. a) State the need for user-defined functions. 5M  
b) Differentiate between actual and formal parameters 5M
- (OR)
8. a) Define Recursion. Write a C-Program to calculate factorial of a given number using recursion. 5M  
b) What is an user defined function? When these functions are useful? How a function is declared and what are the rules followed to call a function 5M

### **UNIT-V**

9. a) Write and explain the general format for declaring and accessing members of a structure 5M  
b) Explain about structure and union with examples. 5M  
(OR)
10. a) Represent a complex number using a structure in C. Write a C program that uses functions to perform the following operations: 5M  
i) Reading a complex number ii) Writing a complex number iii) Addition of two complex numbers  
b) Write a C program to store and print name, USN, subject and IA marks of students using structure 5M

### **UNIT-VI**

11. a) Write the syntax of fseek( ) function in C and explain the same 5M  
b) Write a program in C that copies the contents of one file to another file 5M  
(OR)
12. a) Explain the concept of streams and their significance in I/O operations 5M  
b) Write a C program to read and display the contents of a file. 5M

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

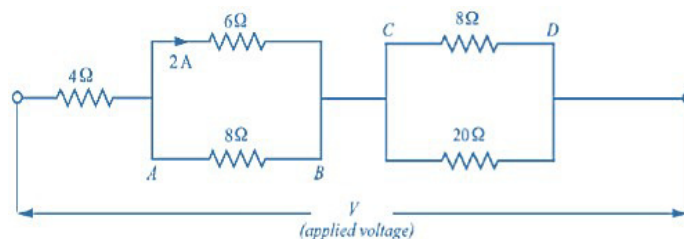
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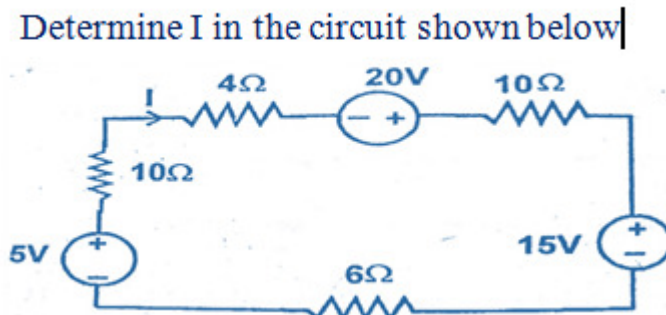
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**UNIT-I**

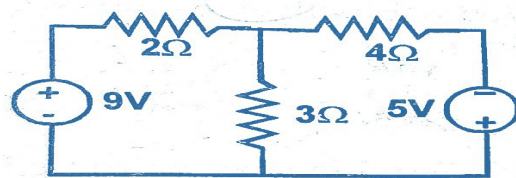
1. a) Explain the type of electrical sources. Write in brief about the sources. 5M  
b) The current in the  $6\Omega$  resistance in the circuit shown below is 2A. Determine the current in all the branches and the applied voltage 5M

**(OR)**

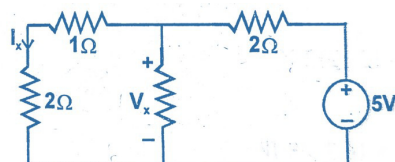
2. a) Explain Kirchhoff's laws with diagrams. 5M  
b) Determine I in the circuit shown below 5M

**UNIT-II**

3. a) What is Super mesh. Write the basic steps to solve a problem with super mesh with example 5M  
b) Find the value of mesh currents for the circuit shown below 5M

**(OR)**

4. a) What is Super node? Write the basic steps to solve a problem with super node with example. 5M  
b) Find  $V_X$  and  $I_X$  in the circuit shown below: 5M

Find  $V_X$  and  $I_X$  in the circuit shown below:

### **UNIT-III**

5. a) Define (i) Average value (ii) RMS value (iii) Form factor (iv) Peak factor 5M  
b) An Inductor has a linear change in current from 50mA to 100mA in 2ms and induces a voltage of 160mV. Calculate the value of the Inductance. 5M
- (OR)**
6. a) Define the power factor and Explain its significance 5M  
b) Derive RMS, Average values for a sinusoidal wave form. 5M

### **UNIT-IV**

7. a) Define magneto motive force (MMF), Reluctance, flux density, permeability, and magnetizing force in a magnetic circuit. 5M  
b) One coil of a magnetically coupled pair has a current 5.0 A, the resulting fluxes  $\phi_{11}$  and  $\phi_{12}$  are 0.2 and 0.4 mWb, respectively. If the turns are  $N_1 = 500$  and  $N_2 = 1500$ , find  $L_1$ ,  $L_2$ ,  $M$ , and the coefficient of coupling  $K$  5M
- (OR)**
8. a) Explain self and mutual induced EMF. 4M  
b) A 30-A current in the primary of a transformer results in a primary flux of 0.5 Wb. Given:  $N_1 = 2N_2 = 200$  and  $k = 0.9$ . Find  $L_1$ ,  $L_2$ , and  $M$  6M

### **UNIT-V**

9. a) What are the main parts of a DC Machine? State the function of each part 5M  
b) Calculate the generated emf of a DC Generator which has 4 poles total number of conductors equal to 256 Lap-wound running at 2000 rpm. The useful flux per pole is 0.2 Weber 5M
- (OR)**
10. a) Derive the E.M.F. equation of a DC generator 5M  
b) Calculate the emf induced in the armature of a two-pole generator whose armature has 280 conductors and is revolving at 1000 rpm. The flux per pole is 0.03 Weber. 5M

### **UNIT-VI**

11. a) Explain the principle of operation of a DC motor. 5M  
b) A 4 pole, lap connected DC motor has 576 conductors and draws an armature current of 10 A. if the flux per pole is 0.02 wb. Calculate the armature torque developed 5M
- (OR)**
12. a) Draw and explain the characteristics of DC shunt 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