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| **MODEL QUESTION PAPER** | | | | | | |
| PRINCIPLES OF PROGRAMMING USING C  Category: Professional Core Course  Stream: Computer Science (Common to AI, BT, CS, CY, CD & IS Programs)  (Theory and Practice) | | | | | | |
| **Course Code** | **:** | 22CS23 |  | **SEE** | **:** | **100 Marks** |
| **Credits: L:T:P** | **:** | 2:0:1 |  | **SEE Duration** | **:** | **3.00 Hours** |

**Answer all the questions from Part-A**

**Answer any 6 full questions from Part-B choosing one from each choice.( Question numbers 2 and 11 is compulsory)**

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|  |  | **Marks** | **CO** | **BTL** |
| 1.1 | What is the output of the following program?  #include<stdio.h>  int main( )  {  int a=5,b=3;  printf(“\n %d”, ++(a\*b+2));  return 0;  } | 1 | 1 | 2 |
| 1.2 | Local variable which exists and retains its value even after the control is transferred to the calling function is,------------.storage class. | 1 | 1 | 1 |
| 1.3 | What will be printed by the code below? Justify your answer.  float x=220.4;  if(x<200)  printf(“One “);  if(x<300)  printf(“Two “);  if(x<400)  printf(“Three “); | 1 | 2 | 2 |
| 1.4 | The -----------operator can be used to determine the length of array and structures | 1 | 1 | 1 |
| 1.5 | What is the difference between function definition and function declaration? Give an example. | 1 | 1 | 1 |
| 1.6 | char c = ‘Y;  switch(c)  {  case ‘Y’: printf(“Yes”);    case ‘N’: printf(“No”);  break;  default : printf(“Others”);    }  Analyze the output printed for the code above. | 1 | 2 | 2 |
| 1.7 | char str1[10], str2[10];  str1[10]=”Programming In”;  str2[10]=”C”;  printf(“%s%s”,str1,str2);  Analyze the output of the above code snippet and comment.. | 1 | 3 | 3 |
| 1.8 | What will be the output of the program ?  #include<stdio.h>  int main()  {  char str[20] = "Hello";  char \*const p=str;  \*p='M';  printf("%s\n", str);  return 0;  } | 1 | 3 | 3 |
| 1.9 | void \* malloc(size\_t n) returns \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | 1 | 1 | 2 |
| 1.10 | What will be the output  #include <stdio.h>  #include<stdlib.h>  void main()  {  int \*ptr = (int \*)malloc(sizeof(int));  \*ptr = 10;  free(ptr);  \*ptr= 5;  printf("%d", \*ptr);  } | 1 | 3 | 3 |
| 2 a. | Explain in Detail the Basic Structure of C Program? | 7 | 1 | 2 |
| b. | What are the different types of errors in C? Explain any three errors with example? | 7 | 1 | 2 |
|  |  |  |  |  |
| 3a. | Write a program to read a matrix and find the sum of positive numbers, negative numbers and their average. | 7 | 2 | 2 |
| b. | Write a program using a do…while loop to reverse the digits of a given number. | 7 | 2 | 2 |
|  | **OR** |  |  |  |
| 4 a. | Write a C program to read a 1D array from the user and find the largest and smallest of n numbers and also print its position. | 8 | 2 | 2 |
| b. | Write a program to read chemistry test marks of 75 students and count the number of students who have secured marks in the range of 80-90. Use while and continue statements. | 6 | 2 | 3 |
|  |  |  |  |  |
| 5 a. | Design a C program to Concatenate the First Name and Second Name. The program should display the final concatenated Name. (Do not use any built in string functions) | 7 | 3 | 3 |
| b. | Design a C program to find the Factorial of a given number to using Recursion. | 7 | 2 | 2 |
|  | **OR** |  |  |  |
|  |  |  |  |  |
| 6 a. | Design a C program using user defined functions to find the Transpose of a given Matrix and display the result. | 7 | 3 | 3 |
| b. | Design a C program to swap given Two numbers using Pass by reference in Functions. | 7 | 3 | 3 |
|  |  |  |  |  |
| 7 a. | Bring out the need for structures in C? Describe the two ways of creating structures in C with examples and also between these two ways, mention which way is better | 6 | 2 | 1 |
| b. | Write a C program to read and print Employee’s Details using Structure - read employee’s details like name, employee id and basic salary, Create a function Gross\_salary() to compute the same and then print the Employee details and the gross salary. | 8 | 3 | 3 |
|  | **OR** |  |  |  |
| 8 a. | What will be the output of the C program and justify the answer.  #include<stdio.h>  int main(){  int a = 130;  char \*ptr;  ptr = (char \*)&a;  printf("%d ",\*ptr);  return;  } | 6 | 3 | 3 |
| b. | Write a program in C using pointers to search an element in an array and print the element found and its location. If the search element is not found, then print appropriate message. Create functions for  1) inputting the array  2) Searching the element. | 8 | 3 | 3 |
|  |  |  |  |  |
| 9a. | Differentiate between static and dynamic memory allocation using a C program . | 7 | 2 | 1 |
| b. | Write a C program to insert elements from front ,display and delete from using single linked list | 7 | 2 | 3 |
|  | **OR** |  |  |  |
| 10 a. | Explain the functions used in file operations with an example. | 7 | 2 | 1 |
| b. | Write a C program to insert elements from rear ,display and delete from using single linked list | 7 | 4 | 3 |
| 11. | i. Program to calculate the sum of n numbers entered by the user using malloc().  ii. Program to calculate the sum of n numbers entered by the user using calloc().   1. Program in C using realloc(). | 20 | 4 | 4 |