**RV College of Engineering, Bengaluru-560059**

**( Autonomous Institution affiliated to VTU, Belagavi )**

**Department of Computer Science and Engineering**

**Model Question Paper**

**First Semester Autonomous Examinations**

**22ES14A**

**Fundamentals of Programming using C**

**Duration: 3 Hours Max marks: 100**

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

**Answer any 5 full questions from Part-B choosing one from each choice.(Question number 2 is compulsory)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PART-A** | | | | | | | |
|  | |  | **Marks** | **CO** | **BTL** | **PO** | **PI CODE** |
| 1.1 | | Reading and printing characters symbol in flowchart is represented using \_\_\_\_\_\_\_\_\_\_\_\_\_. | 1 | 1 | 1 | 1 | 1.6.1 |
| 1.2 | | Write an algorithm to find the area of Circle. | 1 | 2 | 2 | 2 | 2.5.2 |
| 1.3 | | The format identifier ‘%d” is used for \_\_\_\_\_ data type. | 1 | 1 | 2 | 1 | 1.6.1 |
| 1.4 | | Write the output of the following program:  #include<stdio.h>  main()  {  printf(“%d”,’a’);  } | 1 | 2 | 3 | 2 | 2.5.2 |
| 1.5 | | \_\_\_\_\_\_\_ operator returns the number of bytes occupied by the operand | 1 | 1 | 1 | 1 | 1.6.1 |
| 1.6 | | The \_\_\_\_\_ specification is used to read/write a hexadecimal integer | 1 | 1 | 1 | 1 | 1.6.1 |
| 1.7 | | Write the output of the following code?  #include<stdio.h>  int main()  {  int x=3, y=5, z=7;  int a,b;  a = x \* 2 + y / 5 – z \* y;  b = ++x \* (y – 3) / 2 – z++ \* y;  printf(“\n a = %d”, a);  printf(“\n b = %d”, b);  return 0;  } | 2 | 1 | 2 | 2 | 2.5.1 |
| 1.8 | | Is the loop in the following program a finite or infinite loop?  #include <stdio.h>  int main()  {  for(;;)  {  printf("Hi! ");  };  return 0;  } | 1 | 1 | 2 | 2 | 2.5.1 |
| 1.9 | | The statement arr[3] = 10; initializes the \_\_\_\_\_\_\_\_\_ element of the array with value 10. | 1 | 1 | 1 | 1 | 1.2.1 |
| 1.10 | | Can a two-dimensional array of specific data type have data of two different data types? | 1 | 1 | 2 | 1 | 1.2.1 |
| 1.11 | | Output of the following program is \_\_\_\_\_\_\_\_\_\_\_\_.  #include <stdio.h>  int main()  {  int a=3;  if(a-3)  {  printf("\nHello RVCE!");  }  if(1)  {  printf("\nHello RVCE, Happy to study here!");  }  return 0;  } | 1 | 2 | 3 | 2 | 2.5.3 |
| 1.12 | | What is the significance of the instruction strcpy (str1,str2)? | 1 | 2 | 2 | 1 | 1.6.1 |
| 1.13 | | Write a snippet of code to display your name on the monitorCO2. | 1 | 2 | 2,2 | 1 | 1.6.1 |
| 1.14 | | The number of value the function can return is \_\_\_\_\_\_\_\_\_\_\_\_\_. | 1 | 2 | 2 | 1 | 1.6.1 |
| 1.15 | | What is a function prototype? Where can you place these prototypes in a C program? | 2 | 2 | 2 | 1 | 1.6.1 |
| 1.16 | | Give two difference between Recursion and Iteration. | 2 | 2 | 2 | 4 | 4.4.1 |
| 1.17 | | Define the structure named Student with the following members: Name, Age, USN, Marks of 6 subjects. | 1 | 4 | 2 | 1 | 1.6.1 |
| PART-B | | | | | | | |
| 2 a. | With an example, explain the structure of C program. | | 8 | 1 | 1 | 1 | 2.1.2 |
| b. | What is a computer? With a neat diagram explain the components of a computer system. | | 8 | 1 | 1 | 1 | 2.1.2 |
|  |  | |  |  |  |  |  |
| 3a. | Write a short note on basic data types that the C language supports. | | 6 | 1 | 1 | 1 | 1.4.1 |
| b. | Differentiate between typecasting and type conversion | | 4 | 1 | 2 | 1 | 1.4.1 |
| c. | Write a program to count number of vowels and consonants | | 6 | 2 | 3 | 2 | 2.2.4 |
|  | *OR* | |  |  |  |  |  |
| 4 a. | Explain the terms variables and constants. How many type of variables are supported by C? | | 4 | 1 | 1 | 1 | 1.4.1 |
| b. | Write a program to calculate salary of an employee, given his basic pay (to be entered by the user), HRA=10% of the basic pay, TA=5% of basic pay. Define HRA and TA as constants and use them to calculate the salary of the employee. | | 6 | 2 | 3 | 2 | 2.2.4 |
| c. | Write a program to prepare a grocery bill. For that enter the name of the items purchased, quantity in which it is purchased, and its price per unit. Then display the bill in the following format. | | 6 | 3 | 3 | 2 | 2.2.4 |
|  |  | |  |  |  |  |  |
| 5 a. | Write a program to print a multiplication table of a given number, after printing the multiplication table the program should ask the user “Do you want to continue [Yes/No]? ”. If a user enters “y” or “Y”, then the program should print a multiplication table of the given new number and if the user enters “n” or “N”, then the program should exit. | | 6 | 4 | 3 | 3 | 3.8.2 |
| b. | Write a program to print a Pascal Triangle of 5 | | 5 | 4 | 3 | 3 | 3.8.2 |
| c. | Write a program to delete all the duplicate entries from an array of *n* integers. | | 5 | 4 | 3 | 3 | 3.8.2 |
|  | *OR* | |  |  |  |  |  |
| 6 a. | Differentiate else-if ladder from switch-case. Write a program to read the numbers n1 and n2 and perform arithmetic operations according to input of user choice, for example if user enters choice value 1, then program should perform addition of n1 and n2 and so on. | | 6 | 2 | 2 | 2 | 2.5.2 |
| b. | Illustrate the concept of nested if-else with a simple example. | | 4 | 2 | 2 | 2 | 2.5.2 |
| c. | Write a program that reads two matrices A and B, and compute and print the product matrix of A and B. | | 6 | 4 | 3 | 3 | 3.8.2 |
|  |  | |  |  |  |  |  |
| 7 a. | Write a C program which uses a pointer to access the array elements without using the length of the string. | | 8 | 2 | 3 | 3 | 3.6.2 |
| b. | Explain any four common operations performed on Character strings. | | 8 | 1 | 2 | 2 | 2.5.2 |
|  | *OR* | |  |  |  |  |  |
| 8 a. | Define a Function and mention its uses. Write a C program to sort the numbers using the Selection sort using function. | | 8 | 2 | 3 | 3 | 3.6.2 |
| b. | Write a C program to sort the elements using Bubble Sort technique using function. | | 8 | 3 | 3 | 3 | 3.6.2 |
|  |  | |  |  |  |  |  |
| 9a. | With examples, explain different types of structure initialization. | | 10 | 2 | 2 | 2 | 2.5.2 |
| b. | Define Recursion. Write a C program to find the factorial of a given number using recursion. | | 6 | 2 | 3 | 3 | 3.7.1 |
|  | OR | |  |  |  |  |  |
| 10 a. | Write a C program to swap two numbers using functions by passing parameters by reference . | | 8 | 4 | 3 | 3 | 3.7.1 |
| b. | Define pointers. Explain the use of & and \* operators in pointers with suitable examples. | | 8 | 1 | 2 | 2 | 2.8.2 |