Total No. of printed pages = 3

CS 181106

Roll No. of candidate

2/3/   2022

B.Tech. 1st Semester End-Term Examination

PROBLEM SOLVING THROUGH PROGRAMMING USING C

New Regulation (w.e.f. 2017-18) &

New Syllabus (Group A) (w.e.f. 2018-19)

Full Marks – 70   Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No.1 and any *four* from the rest.

1. Answer the following questions: (MCQ/Fill in the blanks) $(10 \times 1 = 10)$

    (i) CPU consists of
    (a) CU   (b) ALU
    (c) both (a) and (b)   (d) None of the these

    (ii) RAM means
    (a) Random Access Memory   (b) Read Access Memory
    (c) Raw Access Memory   (d) None

    (iii) "C is a Machine Language" The statement is:
    (a) True   (b) False

    (iv) Printer is an
    (a) Input Device   (b) Output Device

    (v) One Byte is equal to ——————— bits
    (a) 8   (b) 4
    (c) 2   (d) None

    (vi) Compilers are required to convert
    (a) Machine Level Language to High Level Language
    (b) High Level Language to Machine Level Language
    (c) Both (a) and (b)
    (d) None

(vii) What will be the output of the following C code?

```
#include<stdio .h>
void main()
{
  int k = 0;
  for (k<3 ; k++)
  printf("Hello");
}
```

    (a)   Compile time error   (b)   Hello is printed thrice

    (c)   Nothing   (d)   Varies

(viii) Where are programs stored when they are being executed:

    (a)   RAM   (b)   CPU

    (c)   Hard Disk   (d)   CD-ROM

(ix) Array is a——————— data structure.

    (a)   Non-linear   (b)   Linear

    (c)   Data type   (d)   None

(x) What will the following C program segment print?

```
main()
{
  int i = 2,j=3;
  {
  int i=4,j=5;
printf("%d%d", i, j);
  }
printf("%d%d", i, j);
}
```

    (a)   4545   (b)   4523

    (c)   2345   (d)   2323

2. (a) Draw a flowchart to accept ten numbers and then find their average.   (7)

    (b) Differentiate between the following pairs: (4+4= 8)

      (i)   Input and Output Devices

      (ii) Compiler and Interpreter

3. (a) List the types of arithmetic operators available to perform various operations in the C language. Explain each with an example. (8)

   (b) What are the data types in C. Explain each with an example. (7)

4. (a) Write the syntax and flowchart of the following loop structure: (4+4=8)
   (i) for
   (ii) while

   (b) Write a c-program to explain the behavior of switch case in C language. (7)

5. (a) Write a C program to explain how strings can be stored in an array. (7)

   (b) How to represent and declare a 1D and 2D array in the C programming language. Discuss with a program segment. (8)

6. (a) Use for loop and if else in a C program to print all the even and odd numbers from 1 to 100. (7)

   (b) Use function call in a C program to print sum of two numbers passed to the function from main function. (8)

7. (a) What are the advantages of binary search over sequential search. Justify your answer (7)

   (b) Explain insertion sort with the help of the following sequence of numbers:
   54, 26, 93, 17, 77, 31, 44, 55, 20 (8)

8. Write short notes on any *three* (3×5=15)

   (a) Pointer variables

   (b) Preprocessor directive

   (c) Recursion

   (d) Function prototype