

B.Sc. Semester III (Honours) Examination, 2018-19**MATHEMATICS****Course ID : 32115****Course Code : SHMTH-305SEC-1(T)****Course Title : C Programming Language (New)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five questions: 2×5=10**

- (a) Define source and object programs.
- (b) If K is an integer variable and a is a real variable then what will be the value of $K = 2/9.0$ and $a = 2/9.0$.
- (c) What is the difference between $abs()$ and $fabs()$ functions?
- (d) Consider the following 'C' statement: $X = (j + k > 5) ? (j + k) : 5$; what will happen when this statement is executed if (i) $j = 5$ and $k = 3$ and (ii) $j = 1$ and $k = -3$?
- (e) State two differences between a compiler and an interpreter.
- (f) Describe the difference between $=$ and $==$ symbols in C programming.
- (g) If the matrix $\begin{bmatrix} 2 & 3 & 4 & 5 \\ 1 & 2 & 3 & 7 \\ 3 & 6 & 2 & 9 \end{bmatrix}$ is declared as a two-dimensional array variable, $a[3][4]$, then find the values of $a[1][3]$ and $a[2][1]$.

(h) Find the output of the following program segment:

```
int sum = 0, i;
for (i = 0; i <= 5; i++)
sum = sum + i;
printf("%d %d", sum, i);
```

2. Answer any four questions: 5×4=20

- (a) (i) What is the machine language? State its main advantage and disadvantage.
- (ii) What do you mean by problem oriented computer language? Explain with example.

 $1+(1+1)+2=5$ **(b) Write a program to find factorial of a number.**

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(c) Find a C program to calculate the value of nPr . 5

(d) Write a C-program to find the root and their nature of a given quadratic equation $ax^2 + bx + c = 0$. 5

(e) What would be the output of the following program segment:

```
main ( )
{
    int i = 2, j = 3, k, l;
    float a, b;
    k = i/j*j;
    l = j/i*i;
    a = i/j*j;
    b = j/i * i;
    printf("%d%d%f%f", k, l, a, b); 5
}
```

Necessary calculations should be mentioned clearly.

(f) (i) How the array variables are declared in 'C'? Illustrate the initialization of an one-dimensional array with example.

(ii) Write a short note on 'while' loop in 'C'. 3+2=5

3. Answer any one questions: 10×1=10

(a) (i) Write a complete 'C'-program to find the sum and average of 100 real numbers by using subscripted variables. (Input should be given by using *scanf()* function)

(ii) Determine the value of the following logical expression
 if $a = 5, b = 15$ and $c = -7$ $b > 15 \ \&\& \ c < 0 \ || \ a > 0 \ \&\& \ (a + b + c) > 0$.
 (Show the intermediate logical calculations).

(iii) Write a short note on 'shorthand assignment operator'. 6+2+2=10

(b) Write a program to print all prime numbers from 1 to 300 using nested loops, break statements, continue statement. What will be the output of the following program?

```
#include < stdio.h >
int main ( )
{
    int x = 10, y = 20;
    if (x > = 2 and y < = 50)
    print ("%d\n", x);
}
```

7+3=10
