B.Sc. Semester-V Examination, 2022-23

MATHEMATICS [Programme]

Course ID : 52110   Course Code : SP/MTH/504/SEC-3

Course Title : Programming Language : C or C++

Time : 2 Hours   Full Marks : 40

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Notations and symbols have their usual meaning.

UNIT–I

1.   Answer any **five** of the following questions:

2×5=10

a)   Write a program segment to interchange the values of two variables without using any third (temporary) variable.

b)   State the output of the following program segment:

int i, s=0;

for(i=5; i<=8; i++)

{ s=s+i;

printf("%d,%d \n", i,s);

}

c)   What are system software and application software?

d)   State the output of the following program segment:

for(i=1; i<4; i++)

printf("%d\n", Mathematics);

e)   Write down the general structure of *do-while* loop.

f)   Write the syntax of the switch case.

g)   Write the C-equivalent form of the following expression:

$$x^2 - 3e^{ax} + cos(2x) + log(x^3 + y^3) + |x + y|.$$

h)   State one advantage and one disadvantage of Low Level Language.

UNIT–II

2.   Answer any **four** of the following questions:

5×4=20

a)   Write a C program to find the sum of the following series:

$$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + ... - \frac{1}{99}$$

b) Write a C program to find the largest among three given integers.

c) Write a C program to reverse a given number.

d) Write a C program to find all the factors of a given integer.

e) Write a C program to find the largest entry in a given $m \times n$ matrix.

f) Write a C program to find the area of a triangle. Your program should contain a function that calculates the area of a triangle.

UNIT–III

3. Answer any **one** of the following questions:

$$10 \times 1 = 10$$

a) i) What do you mean by library functions in C? How to include them in a C program?

ii) Explain the use of *break and continue* statements in a *for* loop with examples.

iii) State the output of the following program segment:

int a = 256452, d, y = 0, t = 1;

while(a>0)

{d = x%10;

if (d%2= = 0)

{y =y + t*d;

t = t*10;}

a= a/10;}

printf("%d",y);   2+4+4

b) i) Describe all the logical operators available in C.

ii) What do you mean by a two-dimensional array? How a two-dimensional array is declared in C? Mention the advantages and disadvantages of using array in C.

iii) Name two keywords of C.   5+(1+1+2)+1

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