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BSC/Part-II/COS(H)-V(Prac)(Set-I)(Unit-I)

**2019**

**Part – II**

**COMPUTER SCIENCE**

**(Honours)**

**Paper – V**

**(Practical)**

**(Set – I)**

*Full Marks – 50*

*Time : 4 Hours*

*The figures in the right-hand margin indicate marks.*

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

**Unit – I**

Answer any **two** questions taking one from each group lottery basis :

**Group – A**

20×1

**(C-Programming )**

1. Write a program to sort a given data set using quick sort method. Data will be provided by the examiner.
2. Write a program to find the value of  $\cos(x)$  from the following series :

**P.T.O.**

Use it to find the value of  $\cos x$  for  $x = 30^\circ$  &  $45^\circ$   
taking terms  $\geq 10^{-3}$

$$\cos(x) = 1 - \frac{x^2}{2} + \frac{x^4}{4} - \frac{x^6}{6} + \dots$$

- Write a program to convert a decimal number to binary number.
- Write a program to multiply two matrices A and B with appropriate order.
- Write a program to show the numbers divisible by 5 between the range a to b given by examiner.
- Write a program to display prime numbers between a and b, given by examiner.
- Write a program to generate non-fibonacci numbers upto n, given by examiner.
- Write a program to sort the following name in alphabetic order Madras, Delhi, Gujarat, Kolkata, Burdwan, Midnapore, Howrah, Nadia.

**Group – B**

20×1

**(Numerical Programming using C)**

- Write a program to evaluate  $\int_0^6 \frac{dx}{1+x^2}$  using Simpson's  $\frac{1}{3}$ rd rule by taking 6 intervals.

2. Write a program to solve the system of linear equation by Gauss elimination method.

$$2x + y + z = 10, 3x + 2y + 3z = 18, x + 4y + 9z = 16$$

3. Write a program to find a real root of  $x^3 - 3x + 2 = 0$  by Newton-Raphson method correct upto 4 decimal places.

4. Write a program to calculate the root of a given equation by bisection method :  $x^3 - 3x + 5 = 0$

5. Write a program to find a real root of  $f(x) = 0$  by iteration method correct upto four decimal places. Use it for

$$f(x) = x^3 + x - 1 = 0$$

6. Write a program to find  $f(x_i)$  by Lagrange's interpolation formula from the data  $\{(x_i, f(x_i)), i=1, 2, \dots, N\}$ .

Use it to find  $f(15)$  from following data :

x	:	10	25	47	81
f(x)	:	15.24	18.29	20.44	22.86

7. Write a program to solve the differential equation by Euler's method.

$$\frac{dy}{dx} = x^3 + y, y(0) = 0, \text{ compute } y(.1)$$

8. Write a program to compute  $y(1.2)$  from,

$$\frac{dy}{dx} = \frac{x^2 + y^2}{xy} \text{ with } y(1)=0$$

Using Runge-Kutta method of 4th order.

Viva-voce : 5 marks

Practical note book : 5 marks

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