2017

BCA 3rd Semester Examination

MICROPROCESSOR & NUMERICAL LAB.

PAPER—2197 (Set-II)

(Practical)

Full Marks : 100

Time : 3 Hours

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

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

Illustrate the answers wherever necessary.

Group-A

(Microprocessor Lab.)

Answer any *one* question (Lottery Basis). 1×25

1. Write a program to 8085 microprocessor to print first ten Fibonacci numbers.

2. Write a program to add two BCD-numbers.

3. Write a program to convert an 8-bit hex number to octal number.

4. Write a program to transfer a block of data from the memory location XX30H to XX50H in reverse order. XX2FH contains the numbers of data.

5. Write a program to count the number of odd numbers from a set of 10 numbers and store the result in XX50H location.

6. Write a program to find 2's complement of an 8-bit number.

Group–B

Answer any *one* question (Lottery Basis). 1×25

1. Find the largest eigen value and the corresponding eigen vector of the matrix $\begin{bmatrix} 6 & 0 & 3 \\ 1 & -2 & 0 \\ 4 & 6 & 5 \end{bmatrix}$.

2. Using Regula-Falsi Method, find a root of
$x^3 + 2x - 7 = 0$

3. Compute the value of x, for y = 0.6742 from the table using Lagrange interpolation.

x	3.5	4.0	9.8	5.6
y	0.5441	0.6020	0.6812	0.7482

4. Compute the solution of the system by Gauss-Seidel

$6.7x_1 + 1.1x_2 + 2.2x_3 = 20.5$
$3.1x_1 + 9.4x_2 - 1.5x_3 = 22.9$
$2.1x_1 - 1.5x_2 + 8.4x_3 = 28.8$

Correct upto 3 decimal places.

5. Evaluate $\int_1^2 e^x dx$ by taking h = 1 using Trapezoidal rule.

6. Solve the following using Gauss-Seidal method

$x_1 - x_2 + 2x_3 = 4$
$-x_1 + 4x_2 + x_3 = -7$
$2x_1 + x_2 + 5x_3 = 5$

7. Compute y(0.02) where $\frac{dy}{dx} = x^2 + y$, y(0) = 1 by Euler's method.

(Turn Over)

8. Evaluate the integral and sub-interval h = 10

$$\int_0^{\frac{\pi}{4}} \sqrt{1 - 0.162 \sin^2 \phi} \, d\phi \quad \text{by Simpsons } \frac{1}{3} \text{ rule.}$$

9. Solve by using Gauss elimination method

$$x_1 - x_2 + 2x_3 = 0$$
$$-x_1 + 4x_2 + x_3 = 3$$
$$2x_1 + x_2 + 5x_3 = 1$$

10. Find the value of f(x) when x = 1.5 from the following interpolates by using Lagrange interpolation.

x :	1.2	1.8	2.5
f(x) :	2.847	1.680	0.039

Viva — 15 Marks

Practical Note Book — 05

Internal Assessment — 30 Marks

———