2018

BCA 3rd Semester Examination

MICROPROCESSOR AND NUMERICAL LAB

PAPER—2197 (Set-I)

(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 and System Programming Lab)

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

1. Write a program to convert a hexadecimal number into BCD.

2. Write an assembly language program to print odd and even numbers separately from a set of 10 data stored from location XX40H.

3. Write a program for 8085 microprocessor to find 1's and 2's complement of any 8 bit number.

4. Write a program for 8085 microprocessor to print first 20 Fibonacci numbers.

5. Write a program to convert an 8 bit hexadecimal number to octal number.

6. Write a program to add two BCD numbers.

7. Write an assembly language program to find GCD of two numbers.

8. Write an assembly language program to print the Factorial of a number.

Group–B

(Numerical Lab)

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

1. Find the largest Eigen value and the corresponding Eigen vector of the matrix

$$\begin{bmatrix} 7 & 0 & 4 \\ 2 & -3 & 0 \\ 5 & 7 & 6 \end{bmatrix}$$

2. Compute the value of x, for y = 0.6532 from the table using Lagrange interpolation.

x	3	4.5	6.8	8.2
y	0.5224	0.6121	0.6921	0.7542

3. Evaluate $\int_2^3 e^x dx$ by taking h = 1 using Trapezoidal rule.

4. Compute y (0.03) where $\frac{dy}{dx} = 2x^2 + 3y, y(0) = 1$ by Euler's method.

5. Compute the positive root of the equation 4x2 + 3x = 16 using the Newton-Raphson method. Correct up to four significant figures.

6. Find the real root of x3 – x2 – 1 = 0 by Regula–Falsi method.

7. Solve the following system by Gauss Elimination method :

$$3x + 3y + z = 9$$
$$2x + 2y + 3z = 12$$
$$2x + 3y + 3z = 14$$

8. Evaluate y (1.2) using Runga-Kutta method of order 4 for the initial value problem.

$$\frac{dy}{dx} = 4x + y^2, \qquad y(1) = 1.3 \quad h = 0.1$$

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

$\int_0^{\frac{\pi}{4}} \sqrt{1 - 0.154 \sin^2 x}\, dx$ by Simpson's 1/3 rule.

10. Solve the following using the Gauss-Seidal method.

$$x_1 - x_2 + 2x_3 = 4$$
$$-x_1 + 4x_2 + x_3 = -8$$
$$2x_1 + 2x_2 + 4x_3 = 6$$

Viva — 15

P.N.B. — 05

Internal Assessment — 30