# 2017

## BCA 3rd Semester Examination

## MICROPROCESSOR & 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 Lab. )***

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

1. A set of eight data are stored in memory location starting at location XX50H. Write an assembly language program to find the highest data is the set and store the result in XX80H location.

2. Write a program to convert a hexadecimal number into BCD.
   DATA (H) : 23BC

3. Write an assembly language program to separate even numbers and odd numbers from a set of 20 data stored from location XX50H.

4. There is a list of five data 56H, 87H, 9EH, 20H, A4H. Write a program to insert 45H and 63H in the 2nd and 3rd position of this list. After inserting the list will be like 56H, 45H, 63H, 87H, 9EH, 20H, A4H.

5. Write a program for 8085 microprocessor to find 2's complement of an 8 bit number.

6. Write an 8085 assembly language program to add two 16 bit data. Note that the sum may be a 32 bit data.

7. Design a convertes with 8085 instruction set that would convey binary code to Gray code.

8. Write a program to transfer a block of data from the memory location XX50H to XX80H in reverse order.

9. Write a program to find factorial of 8 bit number.

10. Write a program to print first ten fibonacci numbers.

## Group–B

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

1. Find the real root of $x^3 - 4x - 9 = 0$ using Bisection method.

2. Find the real root of $x^3 - x - 1 = 0$ by regular falsi method.

3. Find out the approximate value $\int_1^2 \frac{dx}{1+x^2}$ of by Simpson $\frac{1}{3}$ rule with 6 subintervals.

4. Solve the following system by Gaun-elimination method :

$$2x + 3y + z = 9$$
$$x + 2y + 3z = 6$$
$$3x + y + 3z = 8$$

5. Evaluate y(1.1) using Runga-Kutta method of order 4 for the initial value problem

$$\frac{dy}{dx} = 3x + y^2, \quad y(1) = 1.2 \qquad h = 0.1$$

6. The following table given the value of x and y :

| x | 1.2 | 2.1 | 2.8 | 4.1 | 4.9 | 6.2 |
|---|---|---|---|---|---|---|
| y | 4.2 | 6.8 | 9.8 | 13.4 | 15.5 | 19.6 |

Write a program to find the values of x corresponding to y =12, using Lagranges technique.

7. Calculate y(1.5) using Runga-Kutta method of order four of the initial value problem

$\frac{dy}{dx} = \cos^2 x - 2x + y^2$, $y(1) = 0$ using $h = 0.1$.

8. Compute by the Newton-Raphson method the positive root of the equation $3x^2 + 2x = 9$, correct upto four significant figures.

9. Evaluate $\int_0^1 \left(4x - 3x^2\right) dx$, taking 10 intervals by Simpsons $\frac{1}{3}$ rule.

10. Evaluate the integral and sub interval $n = 10$

$\int_0^{\frac{\pi}{4}} \sqrt{1 - 0.162 \sin^2 \phi} d\phi$ by Trapezoidal rule.

**Viva — 15 Marks**

**Practical Note Book — 05 Marks**

**Internal Assessment — 30 Marks**