Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name : Computer Oriented Numerical Methods (CONM)

Subject Code : 5CS03MCN1 Branch: MCA

Semester : 3 Date : 27/11/2018 Time : 02:30 To 05:30 Marks : 70

Instructions:

(1) Use of Programmable calculator and any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

SECTION – I

Q-1 **Attempt the Following questions** **(07)**

a. What is Decimal Number? **01**
b. Define Error **01**
c. Convert $(11001)_{10}$ = ( )$_2$ **01**
d. Define Binary Addition **01**
e. What is Octal Number? **01**
f. List types of Error **01**
g. Convert (25)$_2$ = ( )$_{10}$ **01**

Q-2 **Attempt all questions** **(14)**

a. Given that one root of the equation $X^3 - 4X - 5 = 0$, find the root correct to three significant digits. (Newton Raphson method) **05**
b. Compute the following equation using Modify Eulor's Method **05**
$dy/dx = X + Y$ where $Y_0 = 1$, $X_0 = 0$, $h = 0.05$, $X = 0.2$, Find the Value of Y = ?
c. Describe types of Error in brief **04**

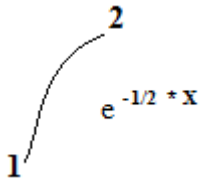
OR

Q-2 **Attempt all questions** **(14)**

a. Find the value of Y Using Following Table(Y on X Curve Fitting Method) **05**

X	2	3	4	5	6
Y	2.1	2.2	2.3	2.4	2.5

b. Given that one root of the equation $X^2 - 3X - 6$, find the root correct to three significant digits. (Regula-False method) **05**
c. Compute the Following Table Value using Simson's 1/3 Rule with 4 interval where **04**



the equation is

Q-3 **Attempt all questions** **(14)**

a. Find the value of Y when X = 0.390 using Langrange Interpolation Method **07**

X	20	25	30	35
Y	0.342	0.423	0.500	0.650

b. Find the value of Y using following Table(Forward Difference Table) **07**

X	3	3.5	4	4.5	5
Y	4	7	8	11	14

OR

Q-3 **a.** Find the value of X when Y = 17 using Langrange Inverse Interpolation Method **07**

X	8	10	15	20
Y	3	8	12	14

b. Find the value of Y using following Table(Backward Difference Table) **07**

X	2.5	3	3.5	4	4.5
Y	9.75	12.45	15.70	19.52	23.57

SECTION – II

Q-4 **Attempt the Following questions** **(07)**

a. What is Curve Fitting? **01**

b. List Methods of Numerical Integration **01**

c. What is Ordinary Differential Method? **01**

d. List Methods of Curve Fitting **01**

e. What is Difference Table Method? **01**

f. Define Numerical Integration **01**

g. List Methods of Difference Table **01**

Q-5 **Attempt all questions** **(14)**

a. Compute the following equation using R – K 2nd Order Method **05**
$dy/dx = X^2 + Y^2$ where $Y_0 = 3$, $X_0 = 1$, $h = 0.25$, $X = 2$, Find the Value of Y = ?

b. Given that one root of the equation $X^2 - 2X - 5$, find the root correct to two significant digits. (Bisection method) **05**

c. Explain Simson's 3/8 Rule with an appropriate example **04**

OR

Q-5 **a.** Find the value of Y Using Following Table(Fitting a Hyperbola Method) **05**

X	7	8	9	10
Y	3.1	3.2	3.3	3.4

b. Compute the following equation using Eulor's Method **05**
$dy/dx = X^2 + Y$ where $Y_0 = 1$, $X_0 = 0$, $h = 0.02$, $X = 0.1$, Find the Value of Y = ?

c. Describe Successive Approximation Method with an example **04**

Q-6 **Attempt all questions** **(14)**

a. Find the value of X Using Following Table(X on Y Curve Fitting Method) **07**

X	4	6	8	9	10	12	14
Y	1.1	1.2	1.3	1.4	1.5	1.6	1.7

b. Find out the X1,X2 and X3 using Gauss Elimination Method, **07**

$$2X1 + 8X2 + 2X3 = 14$$

$$X1 + 6X2 – X3 = 13$$

$$2X1 - X2 + 2X3 = 5$$

OR

Q-6 **Attempt all Questions**

a. Find out the X1,X2 and X3 using Gauss Jordan Method, **07**

$$4X1 – X2 + X3 = 14$$

$$5X1 + 2X2 + 4X3 = 22$$

$$X1 + 4X2 – 9X3 = 20$$

b. Compute the Following Table Value using Trapezoidal Rule with 10 interval where the equation is $\int_0^1 y\,dx$ **07**