Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Computer Oriented Mathematical Reasoning

Subject Code: 4CS02IMR1 **Branch: B.Sc.I.T.**

Semester: 2 **Date: 25/04/2018** **Time: 10:30 To 01:30** **Marks: 70**

Instructions:

(1) Use of Programmable calculator & 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.

Q-1 Attempt the following questions: **(14)**

a) Give differences between Least cost method and north west corner method. **(02)**

b) Iterative methods are fast than direct methods. – True or False? **(01)**

c) Define: Interpolation **(02)**

d) One root of the given equation $x^2 - 3x + 1 = 0$ is between _____. **(01)**
a) 0 and 1 b) 1 and 2 c) -1 and 0 d) none of these

e) Write iterative formula for Secant method. **(02)**

f) Define: Backward Difference **(02)**

h) Write the formula of Gaussian quadrature for n=2. **(02)**

i) Define: Optimum solution **(02)**

Attempt any four questions from Q-2 to Q-8

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

a) Find the roots of equation $x^3 - 3x - 1 = 0$ by using False position method correct up to three decimal places. **(07)**

b) Find the root of the equation $x^3 - 6x + 4 = 0$ by Newton-Raphson method up to three decimal places. **(07)**

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

a) Solve the system of equation by Gauss-elimination method **(07)**
$7x + y - 2z = 0;\ x + 5y - 4z = 0;\ 3x - 2y + z = 0;\ 2x - 7y + 5z = 0$

b) Solve the following system of equation by Gauss-Jordan method: **(07)**
$2x - y - z = 2;\ x + 2y + z = 2;\ 4x - 7y - 5z = 2$

Q-4 Attempt all questions: **(14)**

a) Find the initial feasible solution of the following transportation problem by Vogel's approximation method. **(07)**

Source \ Destinations	1	2	3	4	a_i
1	21	16	25	13	**11**
2	17	18	14	23	**13**
3	32	27	18	41	**19**
b_j	**6**	**10**	**12**	**15**	**43**

b) Find the initial feasible solution of the following transportation problem by North West Corner Method. **(07)**

	D_1	D_2	D_3	D_4	D_5	D_6	Supply
S_1	9	12	9	8	4	3	5
S_2	7	3	6	8	9	4	8
S_3	4	5	6	8	10	14	6
S_4	7	3	5	7	10	9	7
S_5	2	3	8	10	2	4	3
Demand	3	4	5	7	6	4	

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

a) Compute $f(0.56)$ by using Newton's forward difference formula for the following table: **(07)**

x	0.5	0.6	0.7	0.8
f(x)	1.127625	1.185465	1.255169	1.337435

b) Find the value of $f(10)$ by using Lagrange interpolation formula from the following data **(07)**

x	5	6	9	11
f(x)	12	13	14	16

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

a) Find the root of the equation $x^3 - x + 1 = 0$ by bisection method up to three decimal places. **(07)**

b) Find the initial feasible solution of the following transportation problem by Least cost method. **(07)**

	Distribution Centres				
Sources	**D_1**	**D_2**	**D_3**	**D_4**	**Supply**
S_1	2	3	11	7	6
S_2	1	0	6	1	1
S_3	5	8	15	9	10
Requirements	7	5	3	2	**17**

Q-7 Attempt all questions: **(14)**

a) Evaluate $\int_0^1 e^x dx$ by trapezoidal rule with n = 10. **(07)**

b) Evaluate $\int_0^3 \frac{dx}{1+x}$ by using Simpson's $\frac{3}{8}$ rule taking $h = 0.5$. **(07)**

Q-8 Attempt all questions: **(14)**

a) Evaluate $\int_4^{5.2} \log_e x\, dx$ by Simpson's $\frac{1}{3}$ rule. **(07)**

b) Compute $y(5)$ by using Newton's forward difference formula for the following table **(07)**

x	4	6	8	10
y	1	3	8	16