PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.TECH (3rd MIDEXAMINATION)

4th SEMESTER (SUMMER-2020-21)

SUBJECT NAME : PSNM BRANCH: CSE

DATE: 12/03/2021

SUBJECT CODE: 203191251 TOTAL MARKS: 40

Sr.No.		Marks
Q.1	(A) Multiple Choice Questions	05
	(1)For two variables u and v, if an increment in values of u ensures a decrement in values of v then correlation is said to be _____ (a) Positive (b) Negative (c) One (d) linear	
	(2)Which of the following is a transcendental equation? (a) $x^3 + 2x^2 + x - 1 = 0$ (b) $x^2 - 2x - 1 = 0$ (c) $\cos x + xe^x = 0$ (d) All of the above	
	(3)If the amount of change in one variable tends to bear a constant ratio to the amount of change in the other variable then the correlation is said to be (a) positive correlation (b) Simple correlation (c)Negative correlation (d) None of these	
	(4) $E\nabla =$ ___ (a) Δ (b) ∇E (c) (a) and (b) both (d) None of the above	
	(5) As soon as a new value of a variable is found by iteration, it is used immediately in the following equations, this method is called _____ (a) Gauss Seidel Method (b) Gauss Jacobi Method (c) Gauss Elimination Method (d) None of the above	
	(B) Compulsory Question	05
	(1) $(1 + \Delta)(1 - \nabla) =$	
	(2)The first divided difference for argument x_0 and x_1 is _____.	
	(3) If nth difference polynomial of degree n is zero.(True/False)	
	(4)Process of using known to estimate unknown is called _____.	
	(5)Write Iterative formula for finding the cube root of N by Newton – Raphson method.	
Q.2	Attempt any four (Short Questions)	12
	(1) From the following data, Calculate the value n. $\sum x = 4, \sum y = 4, \sum x^2 = 44, \sum y^2 = 44 \sum xy = -40, r = -1$	

(2) Using Newton's divided difference interpolation, compute the value of $f(4)$ from the table given below:

x	1	2	7	8
$y=f(x)$	1	5	5	4

(3) Perform three iterations of the Bisection method to obtain the root of the equation $2\sin x - x = 0$, up to three decimal places.

(4)A rocket is launched from the ground. Its acceleration is registered during the first 80 seconds and is given as follows.

$t(s)$	0	10	20	30	40	50	60	70	80
$a(m/s^2)$	30	31.63	33.34	35.47	37.75	40.33	43.25	46.69	50.67

By Simpson's $\frac{1}{3}$ rule, find the velocity t=80s.

(5)Obtain the cubic polynomial which takes the value

X	0	1	2	3
Y	1	2	1	0

Q.3 Attempt any two 08

(1)Find the number of men getting wages between Rs.10 and 15 from the following data

Wages in Rs.	0-10	10-20	20-30	30-40
Frequency	9	30	35	42

(2) Find the real root of the equation $\log_{10} x - \cos x = 0$, correct to four decimal places.

(3)The following data regarding the heights (y) and weights (x) of 100 college students are given:

$\sum x = 15000$, $\sum x^2 = 2272500$, $\sum xy = 1022250$, $\sum y = 6800$, $\sum y^2 = 463025$

Find the coefficient of correlation between height and weight and also the equation of regression of height and weight.

Q.4 (A) Using Lagrange's formula, express the function $\frac{3x^2+x+1}{(x-1)(x-2)(x-3)}$ as a sum of partial fractions. 05

(B)Fit a straight line to the following data. Also, estimate value of y at x=2.5. 05

X	0	1	2	3	4
Y	1	1.8	3.3	4.5	6.3

OR

(B) Solve the following system of linear equations by Gauss-Seidel Method correct up to two decimal places. 05

$$2x + 10y + z = 13$$
$$2x + 2y + 10z = 14$$
$$10x + y + z = 12$$