

PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
BCA/ IMCA Winter 2019 – 20 Examination

Semester:3
Subject Code: 05191205/ 05391205
Subject Name: Computer Oriented Numerical
And Statistical Methods

Date: 5/12/2019
Time:02:00 to 04:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Answer the followings.**A. Define the following in short.****(05)**

1. Define random experiment.
2. Define sample space.
- 3 Write down formula of Bisection method.
4. Write down any two method to solve system of linear equation.
5. Define Mode.

B. Multiple choice type questions . (Each of 01 marks)**(10)**

1. What is mode for the following observations.
10,12,14,15,15,17,12,14,12.
a) 14 b) 12 c) 15 d) None of these
2. Which of the following is used to find intermediate value of function
a) Lagrange's method b) Regula falsi c) Gauss elimination d) none
3. Which of the following is not an error
A) absolute B) percentage C) truncation D) flow
4. Which of the following method is used to find root of equation.
a) Gauss Jordan b) Bisection method c) Lagrange's method d) None of these
5. What is the meaning of $\Delta =$ _____
A) Forward difference operator B) Backward difference operator
C) Central difference operator D) Divided difference operator
6. Which of the following is transcendental equation.
A) $x^2 - 2x + 1 = 0$ B) $\cos x - e^{-x} = 0$ C) $x^4 - 4 = 0$ D) None of these
7. What is the probability of getting an odd number when a die is thrown.
a) $\frac{1}{2}$ b) $\frac{1}{6}$ c) $\frac{1}{3}$ d) none of these
8. What is the mean of height of 7 students given as 172,154,155,160,163,158,170.
a) 161.71 b) 125.5 c) 160.9 d) None of these
9. Absolute error in taking $\pi = 3.141593$ as $\frac{22}{7}$ is _____
A) 0.0123334 B) 0.0985432 C) 0.00125678 D) 0.0012641
10. What is the probability of getting two heads when two coins are tossed simultaneously
a) $\frac{1}{2}$ b) $\frac{1}{6}$ c) $\frac{1}{4}$ d) none of these

Q.2 Answer the followings. (3 Marks Questions.) (Any Five)**(15)**

1. Using LaGrange's formula find F(3) for following data.

X	0	1	2	5
Y	2	3	12	147

2. Find mean, median and mode for below observation.

15,17,12,13,14,16,1,8,18,14

3 Find the mean and variance for a Poisson variate $3P(x = 2) = P(x = 4)$.

4. Find the best-fit values of a and b so that $y = a + bx$ fits the data given in the table

X	0	1	3	4
Y	1	1.8	3.3	6.3

5. find roots of the equation $x^3 - 12 = 0$ using secant method.

6. The mean and variance of a Binomial distribution are 15 and 6 respectively. Find the values of n and p.

Q.3 Answer the following. (5 Marks Questions)(Any three) (15)

1. solve system of linear equations using gauss elimination method.

$$x - 2y + z = 0$$

$$x + y - z = 4$$

$$x - y - z = 2$$

2.

Find the value of f(3) using Newton's divided difference formula

X	0	1	2	4	5	6
Y	1	14	15	5	6	19

3. Fit a second-degree parabola to the following data taking x as the independent variable.

X	0	1	2	3	4
Y	-4	-1	4	11	20

4. Probability distribution of a random variable is given:

X	0	1	2	3	4
P(x)	1/16	P	3/8	P	1/16

Find the value of p and E(x).

Q.4 Answer the following in detail. (05)
A. solve system of linear equations using gauss jacobi method.

$$15x - 2y + z = 13$$

$$x + 12y - z = 14$$

$$x - y - 15z = 12$$

B.(1) Find mode of the following grouped data (05)

X	0-10	10-20	20-30	30-40	40-50	50-60
Y(No of student)	3	5	7	10	12	15

60-70	70-80	80-90	90-100
12	6	2	8

B.(2) Find the value of y when x=11 using Newton's forward interpolation formula. (05)

X	5	10	15	20	25	30	35
Y	42	77	84	96	105	116	125

OR

B.(1) Calculate the standard deviation for the following grouped data with given class interval. (05)

Class(xi)	0-10	10-20	20-30	30-40	40-50
Frequency(fi)	5	8	15	16	6

B.(2) Find the value of y when x=65 using Newton's backward interpolation formula. (05)

X	10	20	30	40	50	60	70
Y	32	67	84	94	103	114	126