Seat No:_____   Enrollment No:_____

PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
BCA/IMCA Winter 2017 – 18 Examination

Semester: 3   Date:03/01/2018
Subject Code:05191205/05391205   Time: 02:00pm to 04:30pm
Subject Name: Computer Oriented Numerical And Statistical Method   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. Write short notes.**(Each of 1 mark)**   **(05)**
  1. Define random experiment.
  2. Define Sample space.
  3. Write down the formula of Absolute Error.
  4. Define random variable.
  5.Write down the formula of Bisection method.

B. Multiple choice type questions. (Each of 1 marks)   **(10)**
  1. Which of the following is not an error.
     a)absolute   b) percentage   c) truncation   d)flow
  2. Which of the following is truncated off 2.3155 to 4 significant figures?
     a)2.314   b) 2.315   c) 2.316   d)2.3155
  3.What is the Mode of 10,12,14,15,15,17,12,14,12.
     a)12   B)24   c) 20   d) 8

  4. Median = L + $\frac{\frac{N}{2} - C.F}{F}$ X i, What is the meaning of i.

     a) Class interval   b) frequency   c) Value of Data   d) None of these.

  5. Variance is a Square of _____
     a) Mode   b) Median   c) Standard Deviation   d) None of these.
  6. What is the probability of getting an odd number when a die is thrown?
     a) $\frac{3}{4}$ b) $\frac{1}{2}$ c) $\frac{1}{6}$ d) None of these.
  7. Gauss Jacobi and Gauss seidal are which type of Method.
     a)Direct   b) Iterative   c)Indirect   d)None of these
  8)What is the meaning of Δ =_____
     a)Forward difference operator   b) Backward difference operator
     c)central difference operator   d)Divided difference operator
  9. Absolute error in taking π =3.141593 as 22/7 is_____
     a)0.0123334   b) 0.0985432   c) 0.00125678   d)0.00126414
  10. What is the mean of height (in cm) of 7 students given as 172,154,155,160,163,158,170?
     a) 122   b)   161.71   c)404   d) None of these

Q.2 Answer the followings. (3 Mark of Each) (Any five)   **(15)**
  1. Find the mean and variance for a Poisson variate $3P(x = 2) = P(x = 4)$.

  2. Two cards are drawn from a well shuffled pack of 52 cards. Find the probability that both are kings.

  3 The absolute error if the number X = 0.00545828 is
        (i) Truncated to three decimal digits.
        (ii) Round off to three decimal digits.
  4. Find the value of y when x=12 using Newton's forward interpolation formula.

x	10	20	30	40
y	42	77	84	96

5. From the following data of marks obtained by 60 students of a class. Calculate the arithmetic mean.

Marks	20	30	40	50	60	70
No. of Students	8	12	20	10	6	4

6. Write the definition of Mean, Median and Mode with Example.

Q.3 Answer the following. (Any three) (Each carrying 05 marks) **(15)**

1. 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

2. Solve the following system of linear equations using gauss elimination method

$$2x - y - z = -5$$
$$x + 3y + z = 6$$
$$3x - y - 2z = -7$$

3. Solve the following equation by Gauss- Jacobi method.

$$15x_1 + x_2 - x_3 = 14$$
$$20x_2 + x_3 = 23$$
$$2x_1 - 3x_2 + 18x_3 = 37$$

4. Compute f (0.3) for the data using Lagrange's formula of interpolation.

x	0	1	3	4	7
y	1	3	49	129	813

Q.4 Answer the following.

A. Find the value of y when x=78 using Newton's backward interpolation formula. **(05)**

x	10	20	30	40	50	60	70	80
y	32	67	84	94	103	114	126	144

B. Probability distribution of a random variable is given: **(10)**

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

Find the value of p and E(x).

OR

B. In a factory there are three machines and they producing respectively 200,300,500 units of an item daily. The proportion defectives of these machines are 2%, 4%, and 3% respectively an item is taken at random from the day's production and it is found to be defective. Find the probability that the item is produced by second machine. **(10)**