Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF COMMERCE
B.Com. (Hons) Summer 2018 – 19 Examination

Semester: 2 **Date: 17/04/2019**
Subject Code: 16100156 **Time: 02:00pm to 04:30pm**
Subject Name: Business Statistics-I **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 Multiple choice type questions: **(06)**

A)

1. A line graph that represents the cumulative frequencies for the classes in a frequency distribution is

   a) Bar graph b)Frequency Polygon c) Pie graph d)None of these

2. The following set of data represents the closing value of the Canadian dollar for the last 5 days: $68.50, $69.13, $69.87, $70.10, $70.40. Calculate the mean value.

   a) $70.40 b) $68.50 c) $69.60 d) $69.87

3. Mode of 8,9,6,5,8,2,8 is _____ .

   (a) 6 (b) 8 (c) 2 (d) 9

4. n = 22; q = 3/5 Find the mean, μ, for the binomial distribution
   a) μ = 13.5 b) μ = 13.2 c) μ = 8.8 d) μ = 8.9

5. The mean, median and mode of t-distribution are equal to
   (a) 0 (b) 1 (c) 2 (d) none of these

6. When a t-distribution is used to estimate a population mean, the degree of freedom are equal to
   (a) 2n (b) n-1 (c) n (d) n-2

B) Do as directed: **(06)**

1. Write one merit and demerit of secondary data.
2. Define: Pie chart
3. Define: Stratified Random Sampling.
4. If A and B are two events such that P(A)=0.3 ,P(B)=0.4, $P(A \cap B) = 0.2$ Find $P(A \cup B)$
5. The normal distribution is a _____ shaped curve.
6. C−confidence interval for a population mean μ is _____.

Q.2 Do as directed: **(12)**

1. Discuss the five stages of a statistical investigation in detail.
2. Write Classification of Sampling Techniques.
3. A company has 2 plants to manufacture hydraulic machines. Plant I manufactures 70% of the hydraulic machines, and plant II manufactures 30%. At plant I, 80% of hydraulic machines are rated as standard quality; and at plant II, 90% of hydraulic machines are rated as standard quality. A machine is picked at random and is found to be of standard quality. What is the chance that it has come from plant I?

Q.3 Solve the following: (Any Three) **(18)**

1. (a) A survey of 145 people asked them "Which is the nicest fruit?"

Fruit:	Apple	Orange	Banana	Kiwifruit	Blueberry	Grapes
People:	35	30	10	25	40	5

Construct the bar graph for the above data.

(b) Construct an ogive for the following data:

Interval	Frequency
10 – 20	5
20 – 30	7
30 – 40	12
40 – 50	10
50 – 60	6

2. Find the variance and standard deviation for the following table:

xi	6	7	8	9	10	11	12
fi	3	6	9	12	8	5	4

3. A card is drawn from a pack of well-shuffled cards. Find the probability of following events:
   A] The card drawn is a spade.
   B] The card drawn is a king.
   C] The card drawn is a face card.
   D] The card drawn is not a club.
   E] The card drawn is either a heart or a diamond.
   F] The card drawn is a red card.

4. A manager of a company wants to estimate the number of defects per piece of a product. How many subjects are needed to estimate the defects within 4 points with 99% confidence assuming $\sigma = 13.9$? Suppose the manager would like be 95% confidence, how does the decrease in confidence affect the sample size required?
   The following table gives the values of z_c for different percentage confidence.

Percentage confidence	c	z_c
80	0.80	1.28
90	0.90	1.645
95	0.95	1.96
98	0.98	2.33
99	0.99	2.58

Q.4 Solve the following: (Any two) **(18)**

1. The following data gives the weekly expenditure of 100 workers. Find the mean , median and mode from the following table :

weekly expenditure	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. Of workers	3	8	10	19	25	21	6	5	3

2. (a) If the Mean of a Poisson variable is 1.8. Find 1] P(X>1) 2] P(X=5) 3] P(0<X<5).

(where $e^{-1.8} = 0.165$)

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

3. (a) Construct a confidence interval for μ using $t - distribution$.
$c = 0.99, \bar{x} = 12.4, s = 3, n = 7, t_c = 3.707$

(b) In a survey of 2736 adults, 1424 say they have started paying bills online in the last year. Construct a 99% confidence interval for the population proportion. Interpret the results. (Take $z_c = 2.58$)

(c) A fair dice is thrown. Find the probability of getting
i] an even number ii] a perfect square iii] an integer greater than or equal to 3