Seat No: _____ Enrolment No: _____

PARUL UNIVERSITY

FACULTY OF COMMERCE

B.Com. LL.B Summer 2017 – 18 Examination

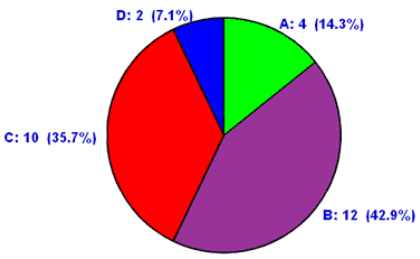
Semester: 4 **Date: 18/05/2018**
Subject Code: 16100156 **Time: 10:30 am to 1:00 pm**
Subject Name: Business Statistics-I **Total Marks: 60**

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.

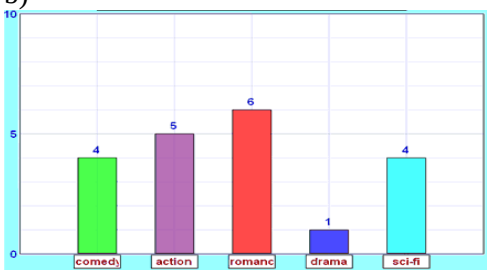
Q.1A) Choose the correct answer. **(06)**

1. Which of the following is an example of Pi-chart?

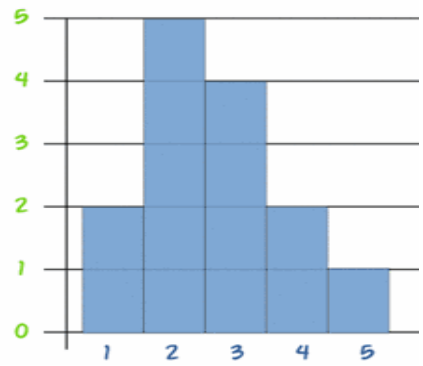
a)



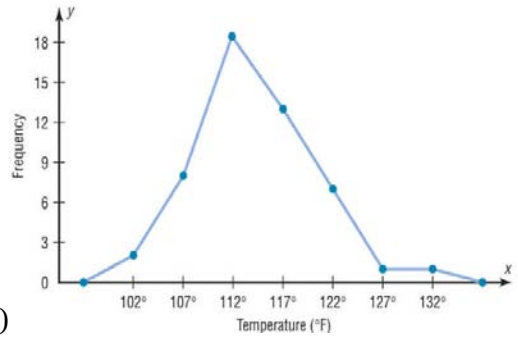
b)



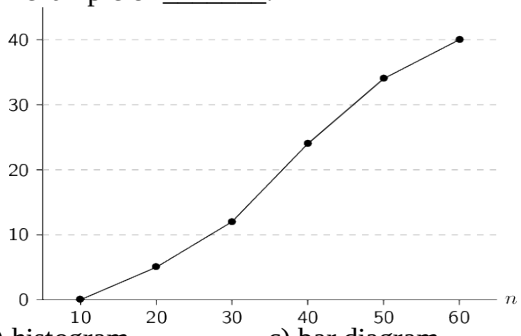
c)



d)



2. The following graph is an example of _____.



a) ogive b) histogram c) bar diagram d) frequency polygone

3. If $p(A) = 0.3 = P(B)$, and if A and B are independent events then $p(A \cup B) =$____
a) 0.3 b) 0.6 c) 0.51 d) 1

4. Find the value of x from the following data, if mode is 3.3

$$3.1, 3.2, 3.3, 3.2, 3.5, 3.3, x, 3.2, 3.3, 3.5, 3.4$$

a) 3.1 b) 3.2 c) 3.3 d) 3.4

5. $\bar{x} = 24.6, Z = 26.1$ then $M =$_____
a) 25.1 b) 21.6 c)29.1 d) 26.6

6. Midpoint of the class $30.5 - 36.8$ is_____
a) 6.3 b) 3.15 c) 67.3 d) 33.65

B) Attempt the following. **(06)**

1. Find the mean of first six natural numbers.
2. Find the median of the following data.

x	0	1	2	3	4	5	6	7	8
f	2	3	5	7	13	20	25	52	33

3. Define Independent events.

4. If $p(A) = 0.3, p(A \cap B) = 0.2$then $p(B|A) =$_____.
5. Define Primary data.
6. The level of confidence c is the area under the standard normal curve between the critical values 0and z_c. [True/False]

Q.2 Attempt the following. **(12)**

1. Find arithmetic mean of the following data:

Class	$0-2$	$2-5$	$5-10$	$10-15$	$15-25$	$25-40$	$40-60$
Frequency	1	3	5	15	9	5	2

2.If for a Binomial variate, mean is 3 and variance is 2 then find $P(X = 4)$

3.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?

Q.3 Attempt any three of the following. **(18)**

1. Define Statistics. Discuss the five stages of a statistical investigation.
2. Find the mean deviation from median of the following:

Income	$0-10$	$10-20$	$20-30$	$30-40$	$40-50$
No. of workers	10	25	30	20	15

3. In a normal distribution mean $\mu = 21.5$ and s.d. $\sigma = 2.5$. Find the following:
(i) $P(18 \leq X)$ (ii) $P(X \leq 25)$ (iii) $P(18 \leq X \leq 25)$
4. A researcher wishes to estimate, with 99% confidence, the population proportion of adults who are confident with theircountry's banking system. His estimate must be accurate within 4% of the population proportion.
(a) No preliminary estimate is available. Find the minimum sample size needed.
(b) Find the minimum sample size needed, using a prior study that found that 38% of the respondents said they are confident with their country's banking system.

Q.4 Attempt any two of the following

1 A. In an experiment 100 squares were observed under a microscope. The distribution of red blood cells as seen in these squares is given below. Find standard deviation for the data. **(04)**

No. of red blood cells	0	1	2	3	4	5
No. of squares	13	28	37	18	3	1

B.Find median of the following data: **(05)**

Class	$10-29$	$30-49$	$50-69$	$70-89$	$90-109$	$110-129$
Frequency	13	22	48	57	25	5

2 A. On an average 1.5 percent of electric bulbs are found to be defective in a bulb manufacturing factory. Using Poisson distribution find the probability of 4 defective bulbs in a box of 200 bulbs. $[e^{-3} = 0.04978]$ **(04)**

B. If $p(A) = \frac{1}{3}, p(B') = \frac{1}{4}, P(A \cap B) = \frac{1}{6}$ then find the following: **(05)**
(i) $p(B)$ (ii) $p(A \cup B)$ (iii) $p(A' \cup B')$ (iv)$p(A' \cap B')$ (v) $p(A'|B')$

3 A. Construct a confidence interval for μ, using $t - distribution$. **(04)**

$$c = 0.99, \bar{x} = 12.4, s = 3, n = 7.$$

B.Consider the following data. **(05)**

131.3	148.3	155.9	160.2	164.5	168.7	173.2	179.3	183.0	191.7	137.2	149.4
156.2	160.5	164.6	169.5	173.7	179.6	183.1	191.7	138.2	150.8	156.3	161.5
165.1	169.6	174.8	180.1	183.5	194.9	142.3	150.8	157.3	162.1	165.2	170.0
176.7	180.4	186.4	196.0	143.4	152.0	157.4	162.3	165.3	170.4	176.8	180.7
186.7	198.3	143.9	153.3	157.7	163.2	165.5	171.1	177.0	181.4	188.0	198.8

Obtain a grouped frequency distribution with classes of width 10 one of which is 160-170 along with relative, percentage and cumulative frequencies.