

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

Semester: 2

Subject Code: 16100156

Subject Name: Business Statistics-I

Date: 13/12/2018

Time: 10.30 am to 1.00 pm

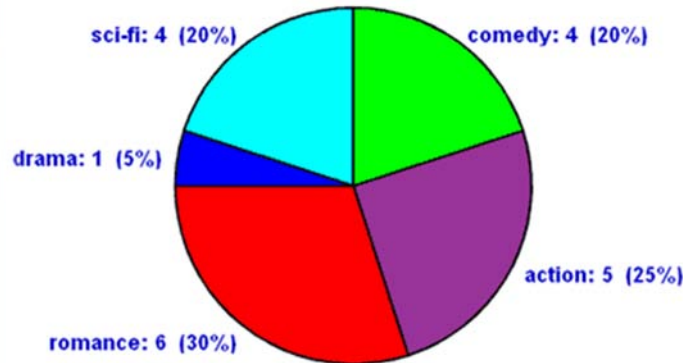
Total Marks: 60

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

1. The following figure is an example of _____



- a) pi chart
c) frequency polygon
 - b) histogram
d) ogive
2. $P(A' \cap B') =$ _____
- a) $1 - P(A \cup B)$
 - b) $1 - P(A \cap B)$
 - c) $P(A \cup B)$
 - d) $P(A \cap B)$
3. The observation which is repeated most is known as _____
- a) Median
 - b) Mode
 - c) Arithmetic Mean
 - d) Geometric Mean
4. The most unbiased point estimate of the population mean is _____.
- a) μ
 - b) p
 - c) \bar{x}
 - d) s
5. Two events A and B are mutually exclusive then $p(A \cup B) =$ _____
- a) $p(A) + p(B)$
 - b) $p(A) + p(B) - p(A)p(B)$
 - c) $p(A)p(B)$
 - d) 0
6. If $P(A) = 0.23$, $P(B') = 0.33$ and $P(A \cap B) = 0.13$ then $P(A \cup B) =$ _____.
- a) 0.43
 - b) 0.90
 - c) 0.77
 - d) 0.56

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

1. For the given observations, what is the mode?

2, 7, 11, 2, 5, 7, 9, 2
2. For a Poisson Distribution mean is 4 then what is variance?
3. What is the Geometric Mean of 2 and 18?
4. What is the probability that the sun will rise at 7 p.m.?
5. Classes are exhaustive if all of the raw data observations fit into the classes chosen. [True/False]
6. Graph of the normal distribution is bell shaped. [True/False]

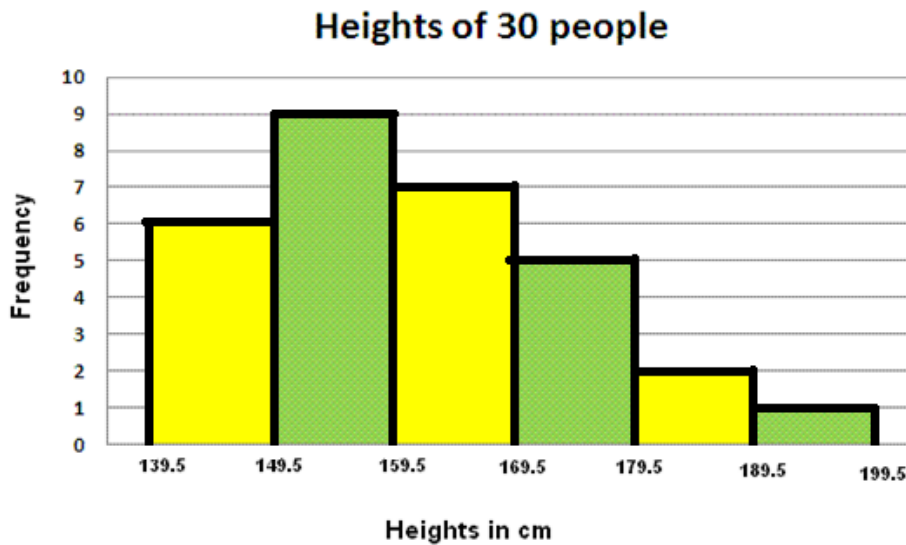
Q.2 Answer the following.

(12)

1. Calculate the standard deviation of the following data

x	10	11	12	13	14	15	16	17	18
f	2	7	10	12	15	11	10	6	3

2. The histogram below shows the heights (in cm) distribution of 30 people.



- a) How many people have heights between 159.5 and 169.5 cm?
 b) How many people have heights less than 159.5 cm?
 c) How many people have heights more than 169.5 cm?
 d) What percentage of people have heights between 149.5 and 179.5 cm?
3. A researcher wishes to estimate, with 99% confidence, the population proportion of adults who are confident with their country's banking system. His estimate must be accurate within 4% of the population proportion. $[z_{0.99} = 2.58]$
 (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.3 Answer the following. (Any Three)

(18)

1. Discuss the methods to collect Primary data and the sources of secondary data in detail.
 2. Following data obtain the two regression lines and the correlation coefficient.

Sales	100	98	78	85	110	93	80
Purchase	85	90	70	72	95	81	74

3. Three unbiased coins are tossed. Write the sample space S .
 Find the probability of getting (i) exactly 2 tails, (ii) at least one tail, (iii) at most 2 tails, (iv) a tail on the second coin and, (v) exactly 2 tails in succession.
 4. The table to the right shows the results of a survey in which 2573 adults from Country A, 1082 adults from Country B, and 1129 adults from Country C were asked if human activity contributes to global warming. Complete parts (a) and (b).

adults who says that human activity contributes	
Country	Percentage
Country A	70%
Country B	80%
Country C	90%

- (a) Construct a 99% confidence interval for the proportion of adults from Country A who say human activity contributes to global warming.
 (b) Construct a 99% confidence interval for the proportion of adults from Country C who say human activity contributes to global warming. $[z_{0.99} = 2.58]$

Q.4 Answer the following. (Any two)**(18)**

1. The contents of urns *I*, *II* and *III* are as follows.
3 white, 2 red and 4 black balls; 2 white, 4 red and 3 black balls; 4 white, 3 red and 2 black balls.
One urn is chosen at random and two balls are drawn. They are found to be red. Find the probability that they came from (i) Urn *I* (ii) Urn *II* (iii) Urn *III* .

2. The following distribution of daily wages of 900 workers contains some unknown frequencies. If the median of the distribution is 59.25INR, find the missing frequencies.

<i>Wages (in INR)</i>	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
<i>No. of workers</i>	120	?	200	?	185

Using these frequencies, find arithmetic mean and mode of the distribution.

3. a) The mean and variance of a binomial distribution are 4 and $\frac{4}{3}$ respectively. Find $P(X \geq 1)$.
b) If a random variable has a poisson distribution such that $P(X = 1) = P(X = 2)$, find (i) the mean of the distribution, (ii) $P(X = 4)$ (iii) $P(X \geq 1)$