

**PARUL UNIVERSITY**  
**FACULTY OF COMMERCE**

**B.Com.(Hons) Supplementary, Winter 2017 – 18 Examination**

Semester: 2

Date: 30/12/2017

Subject Code: 16100156

Time: 10.30 am to 1.00 pm

Subject Name: Business Statistics-I

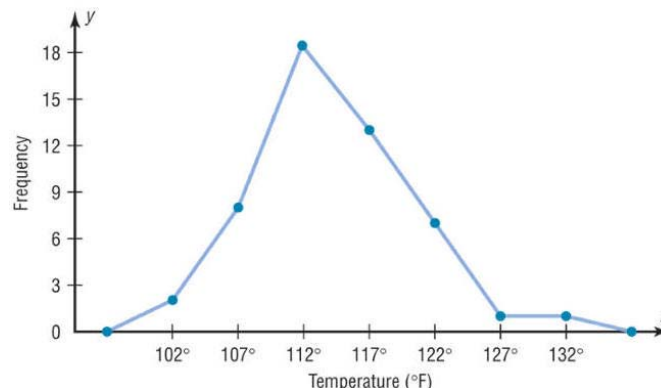
Total Marks: 60

**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. The following figure is an example of \_\_\_\_\_



- a) bar diagram  
b) histogram  
c) frequency polygon  
d) ogive
2. The mid point of the class 332 – 341 is \_\_\_\_  
a) 9  
b) 337  
c) 336  
d) 336.5
3. The observation which is repeated most is known as \_\_\_\_  
a) Median  
b) Mode  
c) Arithmetic Mean  
d) Geometric Mean
4. Two events A and B are independent then  $p(A \cup B) =$  \_\_\_\_  
a)  $p(A)p(B)$   
b)  $p(A) + p(B)$   
c)  $p(A) + p(B) - p(A)p(B)$   
d) 0
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.  $P(A) = \frac{2}{3}$ ,  $P(\bar{A} \cap B) = \frac{1}{6}$  and  $P(A \cap B) = \frac{1}{3}$  then  $P(B) =$  \_\_\_\_  
a)  $\frac{2}{3}$   
b)  $\frac{1}{3}$   
c)  $\frac{5}{6}$   
d)  $\frac{1}{2}$

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

1. The manager of a store examines the number of items purchased per customer passing through the express checkout lane. Here is what was observed:
- |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 7 | 4 | 3 | 2 | 2 | 3 | 2 | 4 | 3 | 2 | 3 |
| 1 | 1 | 4 | 3 | 2 | 3 | 1 | 1 | 2 | 3 | 7 | 3 |   |
- Obtain the corresponding ungroup frequency distribution.
2. Find the class length of the class 35 – 50.
  3. Find the mean of weights 10 students given in kilograms as following:  
32, 26, 41, 35, 28, 42, 36, 40, 33, 42
  4. What is the Geometric Mean of 2 and 18?
  5.  $p(A) = 0.6$ ,  $p(B) = 0.4$  and  $p(A \cap B) = 0.3$  then find  $P(A/B)$ ?
  6. Is the following statement true or false?  
“c – confidence interval for a population mean  $\mu$  is  $\bar{x} - E < \mu < \bar{x} + E$ .”

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

1. Find the mean deviation from Mode

Product output	145	155	165	175	185	195
Workers	4	6	10	18	9	3

2. If  $p(A) = p(B) = p(C) = 0.3$ ,  $p(D/A) = 0.4$ ,  $p(D/B) = 0.5$  and  $p(D/C) = 0.2$ . Find (i)  $p(A/D)$  (ii)  $p(B/D)$
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. The following data regarding the heights (y) and weights (x) of 100 college students are given:  
 $\sum x = 15000$ ,  $\sum x^2 = 2272500$ ,  $\sum xy = 1022250$ ,  $\sum y = 6800$ ,  $\sum y^2 = 463025$   
Find the coefficient of correlation between height and weight and also the equation of regression of height and weight.
3. Three unbiased coins are tossed. Write the sample space S.  
Find the probability of getting (i) exactly 2 heads, (ii) at least one tail, (iii) at most 2 heads, (iv) a head on the second coin and, (v) exactly 2 heads in succession.
4. The table given below shows the results of a survey in which 2573 adults from Country A, 1129 adults from Country B, and 1082 adults from Country C were asked if human activity contributes to global warming. Complete parts (a) and (b)

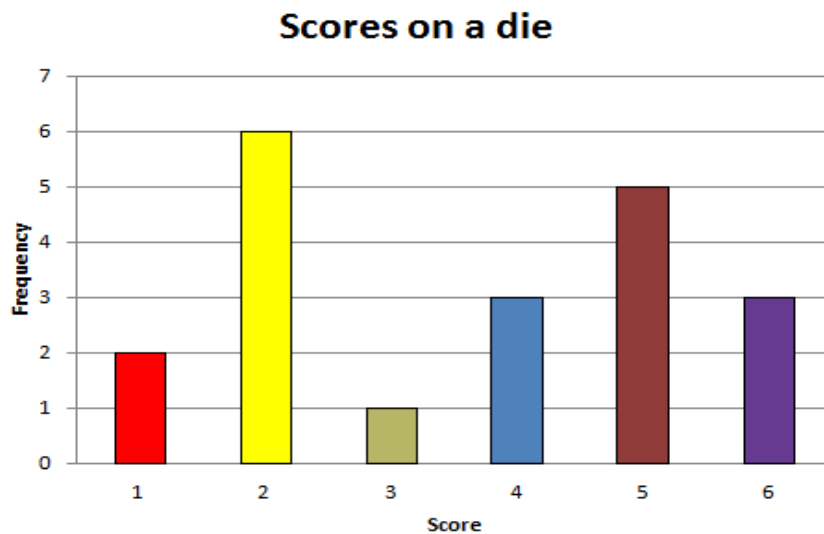
adults who says that human activity contributes	
Country	Percentage
Country A	62%
Country B	90%
Country C	95%

- (a) Construct a 95% confidence interval for the proportion of adults from Country A who say human activity contributes to global warming.
- (b) Construct a 95% confidence interval for the proportion of adults from Country B who say human activity contributes to global warming.  $[z_{0.95} = 1.96]$

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

**(18)**

1. (a) The following bar graph shows the results when a die was thrown a number of times.



- (i) How many 6 were thrown?  
 (ii) How many times 2 were obtained?  
 (iii) In total how many times the die was thrown?  
 (iv) Which number was obtained the least times?  
 (v) Write the frequency distribution.
- (b) In a random sample of 23 people, the mean commute time to work was 33.3 minutes and the standard deviation was 7.3 minutes. Assume the population is normally distributed and use a t-distribution to construct a 99% confidence interval for the population mean  $\mu$ . What is the margin of error of  $\mu$ ? Interpret the results.
2. Find the mean, median and mode of the following data:
- | Class | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 |
|-------|-------|-------|-------|-------|-------|
| $f_i$ | 2     | 9     | 15    | 14    | 10    |
3. a) An unbiased coin is tossed 6 times. Using binomial distribution, find the probability of getting (i) exactly 4 heads (ii) at least 4 heads.  
 b) The variate X has a Poisson distribution and is given that  $P(X = 2) = 0.25$  and  $P(X = 3) = 0.125$ . Using the recurrence relation  $P(x + 1) = \frac{\lambda}{x+1} p(x)$  find  $\lambda$ .  
 Also, Find  $P(X = 0)$ ,  $P(X = 1)$  and  $P(X < 3)$ .  
 $[e^{-1.5} = 0.22]$