



- Note: (i) All Questions are compulsory with internal choice.  
 (ii) Simple Calculator is allowed.  
 (iii) Graph papers will be provided on request.

Q.1

[A] Fill in the blanks. (Any 8 out of 10)

[8]

- i. A subset(part) of population which researcher investigate is known as.....  
(sample, population, statistics)
- ii. Histogram can be used to calculate.....  
(A. Mean, Median, Mode)
- iii. The diagram which represents information in a circle is .....  
(Histogram, Bar Diagram, Pie diagram)
- iv. .... is based on all values of data.  
(A. Mean, Median, Mode)
- v. If Mean deviation = 18 & Mean = 40 then coefficient of mean deviation is.....  
(0.35, 0.45, 0.55)
- vi. The value of correlation coefficient is always lies between.....  
(0 to 1, -1 to 0, -1 to 1)
- vii. Correlation is negative if.....  
(increase in X leads to increase in Y, increase in X leads to decrease in Y,  
decrease in X leads to decrease in Y)
- viii. Ice cream and sun cream sales is an example of .....  
(Absence of correlation, spurious correlation, causal correlation)
- ix. Generally there are ..... regression equation  
(1, 2, 3)
- x. The maximum Probability is \_\_\_\_\_  
(1, 10, 100)

[B] State True or False. (Any 7 out of 10)

[7]

- i. Mode as the average can be calculated for gender data.
- ii. Quartiles is not measure of central tendency.
- iii. If the correlation between X and X is 1.
- iv. The correlation graph is called as scatter plot.
- v. Hours of study and exam marks is an example of negative correlation.
- vi. Any subset of sample space for an experiment is called an event.
- vii. Let S be the Sample Space such that the event A has all element in it then A is called impossible event
- viii. Let S be the Sample Space such that the event A has no element in it then A is called certain event.
- ix. If the value of both regression coefficients is 0.4 then the value of correlation coefficient is 0.16.
- x. If Correlation is negative then both regression coefficient is positive.

Q:2 Solve the following: (ANY-ONE)

[15]

[A]

- i. A sample of 12 senior executives found the following results for percentage of total compensation derived from bonus payments. Find the sample, Mean, median and mode.

15.8	7.3	28.4	18.2	15.0	24.7
13.1	10.2	29.3	34.7	16.9	25.3



- ii. Following is the frequency distribution of age of Instagram user in a random survey. Calculate the Standard deviation and its coefficient.

Age of Instagram user	No. of user
12-18	9
18-24	34
24-30	35
30-36	16
36-42	8
42-48	4
48-54	2

OR

[B]

- i. During 3 hours at Heathrow airport 55 aircraft arrived late. The number of minutes they were is shown in the frequency table below.

Minutes Late	No. of aircrafts
0-10	27
10-20	10
20-30	7
30-40	5
40-50	4
50-60	2

Prepare the histogram representing the data. Calculate the mode from histogram.

- ii. In a study of job satisfaction, a series of test was administered to 50 subjects. The following data was obtained; higher score represent greater satisfactions. Calculate the Mean Deviation and its coefficient.

Class Interval (Satisfaction score)	Frequency
40 - 49	5
50 - 59	5
60 - 69	10
70 - 79	15
80 - 89	11
90 - 99	4

Q:3 Solve the following: (ANYONE)

[15]

[A]

- i. Zippy cola is studying the effect of its latest advertising campaign. People chosen at random were called and asked how many cans of Zippy cola they had brought in the past week and how many Zippy cola advertisement they either read or seen in the past week.

Number of ads :	2	3	7	4	2	0	4	1
Can purchased :	8	11	8	9	4	7	6	3

State the dependent (Y) variable and the independent (X) variable. Draw scatter diagram. Compute the correlation coefficient. Interpret the correlation coefficient within the context of this problem.



- ii. The level of infant mortality ( $y$ ) is represented by the number of baby deaths for every 1000 births. For 12 areas these are shown in the following table. For each area, the percentage ( $x$ ) of babies born into families earning at least £25,000 is also shown.

Area	A	B	C	D	E	F	G	H	I	J	K	L
Percentage ( $x$ )	20	6	10	21	12	36	6	19	26	13	21	16
Infant mortality ( $y$ )	5	17	16	8	15	5	25	12	11	11	7	12

Calculate the regression equation by the least square method and use it to estimate infant mortality with area, the percentage ( $x$ ) of babies born into families earning at least £25,000 is 20.

OR

[B]

- i. Given the regression of  $Y$  on  $X$  is given by  $Y = 4.16X + 397.33$  and regression of  $X$  on  $Y$  is given by  $X = 0.065Y - 6.35$ . Find the correlation coefficient between  $X$  and  $Y$ .
- ii. A survey was conducted in 9 areas of the USA to investigate the relationship between Divorce Rate ( $y$ ) and residential Mobility ( $x$ ); Divorce rate the annual number of divorces per 1000 in the population and the Residential Mobility is measured by the percentage of the population who have moved house in the last 5 years. Calculate the rank correlation coefficient.

Residential Mobility	40	38	46	49	47	43	51	57	55
Divorce Rate	3.9	3.4	5.2	4.8	5.6	5.8	6.6	7.6	5.8

Q:4 Solve the following: (ANY-ONE)

[15]

[A]

- i. Determine the probability of the following events in drawing a card from a standard deck of 52 cards.  
 (a) a seven (b) a black card (c) an ace or a king  
 (d) a black two or a black three (e) a red face card.
- ii. A coffee machine may be defective because it dispenses the wrong amount of coffee ( $C$ ) and/or it dispenses the wrong amount of sugar ( $S$ ). The probabilities of these defects are:  
 $P(C)=0.05$ ,  $P(S)=0.04$ ,  $P(C \text{ and } S)=0.01$   
 What proportions of cups of coffee have (a) at least one defect? (b) no defect?

OR

[B]

- i. These are 100 students in a class. 50 pass in Mathematics, 40 in Economics and 10 in both. A student is selected at random. What is the probability that he passed in  
 (a) at least one subject? (b) in one subject only?  
 (c) in both the subjects? (d) in none of the subjects?  
 (e) only in Economics?
- ii. A distributor makes a profit of Rs. 30 on each item that is received in perfect condition and suffers a loss of Rs. 6 on each item that is received in less-than-perfect condition. If each item received is in perfect condition with probability 0.4, what is the distributor's expected profit per item?





Q:5 Solve the following: (ANY-ONE)

[15]

[A]

- i. The "Computer Today" reported on home technology and its usage by person aged 12 and older. The following data are the hours of personal computer usage during one week for a sample of 50 persons. Calculate the median.

Class interval (computer usage in hours)	Frequency
0-3	5
3-6	28
6-9	8
9-12	6
12-15	3

- ii. The growing use of personal computers is suggested to be one reasons people can operate at-home business. Following is a sample of age data for individuals working at home.

22 58 24 50 29 52 57 31 30 41  
44 40 46 29 31 37 32 44 49 29

Compute the first, second and third quartiles.

OR

[B] Write short notes. (ANY THREE)

- i. Average and its important in data analysis.
- ii. Measure of dispersion and types of measure of dispersion.
- iii. Scatter diagram.
- iv. Types of correlation.
- v. Relation between correlation and regression.