

TIME – 2 Hrs.**MARKS- 60****Please check whether you have got the right question paper.**

Note: 1) All question are compulsory.

2) Figures to the right indicate marks of sub questions.

3) Use of simple calculator is allowed.

Q1. a) Find Mean and Median for the following data. (7)

Class Interval	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Frequency	12	14	10	20	15	14	12	5

b) The life of a fully-charged cell phone battery is normally distributed with a mean of 14 hours, with a standard deviation of 2 hours. What is the probability that a battery lasts
 i) at least 13 hours? ii) between 12 and 16 hours?

(Given $P(0 \leq Z \leq 0.50) = 0.1915$, $P(0 \leq Z \leq 1.0) = 0.3413$) (8)**OR**

Q1. p) Find Standard Deviation for the following data. (7)

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	3	4	2	8	10	11	10	5

q) For a Binomial Distribution, Probability of success=0.5. Out of 8 trials find the probability of
 i) at least 2 successes, ii) at most 3 successes. (8)

Q 2. a) Find the best action using the following criteria: (7)

Maximax, Maximin, Laplace, Hurwitz ($\alpha=0.6$), Minimax RegretPay Off Table

State of Nature Course of Action	S1	S2	S3	S4
A1	20	30	32	25
A2	24	30	36	10
A3	-10	20	40	45

b) A company wants to know if the mean of its new product differs from the mean of the standard which is 0.735 pounds. If a sample of 30 yields a mean of 0.710 and a standard deviation of 0.0504 pounds, make a decision at 5% level of significance. (8)

OR

Q2. p) Find the best action using the following criteria: (7)

EMV (Expected Monetary Value), EOL(Expected Opportunity Loss

Pay Off Table

State of Nature Course of Action	S1	S2	S3
A1	15	25	30
A2	20	45	20
A3	10	20	40
Probability	0.2	0.5	0.3

q) Find 95% Confidence interval of a population mean where, size of the sample= $n=25$, Sample Mean= 362 and population Standard Deviation= 15. (8)

Q3. a) Find mean values of x and y and r (correlation coefficient) for the following regression lines. Estimate (i) y when $x = 10$ (ii) x when $y = 12$. (7)

$$5x - y = 22$$

$$64x - 45y = 24$$

b) Find Index Number using (i) Laspeyre's Method, (ii) Paasche's Method, (iii) Fisher's Method (8)

Commodity	Base Year Price	Current Year Price	Base Year Quantity	Current Year Quantity
A	5	10	20	25
B	6	10	35	30
C	12	12	24	25
D	8	9	45	40
E	10	12	50	55

OR

Q3. p) Find Pearson's Correlation Coefficient for the following data. (7)

X	15	16	17	17	18	19	21	23	25
Y	17	18	14	18	22	19	20	25	28

q) Find Cost of Living Index Number using Family Budget Method. (8)

Group of Commodity	Base Year Price	Current Year Price	Weight
A	25	30	40
B	30	32	20
C	24	25	10
D	35	35	20
E	40	45	10

Q 4. a) Find Upper and Lower Control Limits (UCL and LCL) of a p-chart (Fraction Defective) from the following data. Each Sample has 100 observations. (7)

Sample Number	1	2	3	4	5	6	7	8	9	10
Number of Errors	6	5	0	1	4	2	5	3	3	2

b) A brand manager is concerned about a brand's market share across the country. The results of a survey conducted are given in the following table: (8)

	North	South	East	West	Total
Consumers who purchase the brand	45	55	45	50	195
Consumers who do not purchase the brand	60	45	55	50	210

Calculate sample chi-square for the above data.

OR

Q 4. p) Red Top Cab Company receives several complaints per day about the behaviour of its drivers. Over a 9 day period (in which days are the units of measure), the owner received the following number of calls from irritated passengers: 3,0,8,9,6,7,4,9,8 for a total of 54 complaints. Construct a c-chart. (7)

q) The following grades were given to a class of 100 students. (8)

Grade	A	B	C	D	E
Frequency	14	18	32	20	16

Calculate sample chi-square for the above data.
