

- NOTE: 1. All questions are compulsory and carry equal marks.  
2. Figures to right indicate full marks of each sub-question.  
3. Use of simple calculator is allowed.

Q1) a) Draw Histogram and locate mode of the distribution. Also draw Frequency Polygon for the given distribution. (8)

Marks	10-20	20-30	30-40	40-50	50-60
No of students	15	20	35	30	20

b) Calculate mean and standard deviation from the following data. (7)

Reduction in weight	0-2	2-4	4-6	6-8	8-10
No of patients	5	5	20	15	5

OR

Q1) p) Draw less than and greater than cumulative frequency curve for the following data. Also locate median and two quartiles graphically. (8)

Class interval	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	31	29	70	63	119	126

q) Calculate 73<sup>rd</sup> percentile and 6<sup>th</sup> decile for the following data. (7)

Income tax in (1000 Rs)	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of shops	50	70	80	120	100	50	30

Q. 2) a) Find the co-efficient of co-relation for the following data. (8)

X	Y			
	20-40	40-60	60-80	80-100
20-30	-	2	4	4
30-40	5	2	2	-
40-50	5	8	8	1
50-60	8	6	-	-

b) Find two regression equations for the given data. (7)



X	9	7	8	4	5	6
Y	36	25	33	15	20	22

OR

Q. 2) p) The two regression lines between X and Y are given below. Find mean values of X and Y and also find R. (8)

$$4Y - X - 700 = 0, 9Y - 25X + 5250 = 0$$

q) Fit a trend for the following data by taking the moving average of length 4. (7)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Production	30	33	28	35	38	40	44	47	46	52	55

Q.3) a) Find Laspeyre's, Paasche's and Dorbish Bowley's index numbers for the given data. (8)

Commodity	Price in Rs		Quantity	
	2005	2006	2005	2006
A	15	17	100	95
B	25	26	70	75
C	5	4	5	6
D	8	10	25	20

b) From the following data, calculate chain based index number. (7)

Commodity	Weight	Price in Rupees				
		2001	2002	2003	2004	2005
A	5	10	12	15	17	20
B	3	5	7.5	10	12	15
C	2	2	3	4	5	6

OR

Q. 3) p) Calculate weighted index number by aggregate and average price relative method. (8)

Commodity	Price in Rs		Weight
	1995	1999	
A	14	20	15



B	20	25	10
C	30	35	5

q) Write a short note on basic problem in construction of index number.

Q.4) a) i) State and prove additional theorem of probability. ii) A card is drawn from a full pack, find the probability of getting a heart or a jack. (7)

b) Mr. Rakesh Patil a MBA student has to travel for examination hall. He has just missed his bus near his house. It is 09:30 am now and the examination starts at 10:00 am. He has 3 options. He can ride on his bike, he can walk or he can drive his car to the campus. If he walks there is a 0.6 chance he will get to the test in 45 minutes and 0.4 chance that he will be there in 35 minutes. (8)

If he rides his bike he will get to the test in 35 minutes with probability 0.5, he will reach in 30 minutes is 0.4 and there is 0.1 chance of a flat tire causing him to take 45 minutes. If he drives his car to the examination hall he will take 25 minutes to get there, but time needed to park is 10 minutes with probability 0.5, 15 minutes with probability 0.3 and 20 minutes with probability 0.2. Assuming that Mr. Rakesh Patil wants to minimize expected late time getting to his test, draw a decision tree and determine his best option. (7)

OR

Q.4) p) A Retailor buy certain item for Rs.10/- and sells it for Rs.30/- a case. An item is worthless after the first day. The probability distribution for the demand is given below. Find the number of cases he should buy so as to maximize his profit. (8)

Daily Demand	15	16	17	18	19
Probability	0.15	0.2	0.3	0.25	0.1

What are the properties of a normal curve? (7)