

Oct '09

IJ9 ACH

Basic stats.

Time : 2 hours

Marks : 60

- NOTE :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Simple calculators are allowed.
 - 4) Graph papers will be provided on request.

Q. 1A) The Arithmetic mean and standard deviation of 100 items are found to be 40 and 10 respectively. If at the time of calculations, one item was wrongly taken as 30 instead of 3. Find the correct mean and correct standard deviation. (5)

B) Find the moving average of length 4 for the following data. Represent the given data and moving averages on a graph paper. (5)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Sales in (thousand units)	60	69	81	86	78	93	102	107	100	109

C) For the following probability distribution, obtain (5)

- i) $P(x > 2)$
- ii) $P(x \leq 1)$
- iii) $P(x = 2 \text{ or } x = 3)$
- iv) $E(x)$
- v) $V(x)$

X	-2	-1	0	1	2	3
P(X)	0.1	0.2	0.2	0.3	0.15	0.05

Q.2A) Describe the various stages in the construction of an index number. Also explain the term statistics and its importance in various fields. (15)

Q.3 A) Find mean, Median and Mode for the following distribution : (7)

Class interval	60-75	75-90	90-105	105-120	120-135	135-150
Frequency	3	3	6	5	7	6

B) The following figures are income in Rs (x) and percentage expenditure (y) of 25 families. Construct a bivariate frequency table classifying x into intervals 1200-1300, 1300-1400, and y into 10-15, 15-20, Also write down the Marginal frequency distribution of x and y, the Conditional distribution of x when y lies between 15 to 20 and conditional (8)

distribution of y when x lies below 1400.

x	1550	1623	1310	1420	1600	1225	1310	1640	1512	1690
y	12	14	18	16	15	25	16	20	18	12
x	1680	1300	1425	1565	1330	1202	1250	1490	1587	1643
y	13	25	16	15	23	29	27	18	21	19
x	1689	1523	1425	1385	1400					
y	11	12	18	17	19					

OR

- Q.3A)** Define Karl Pearson's Coefficient of correction and interpret its limiting values. Hence find Karl Pearson's coefficient of correction for the following data. (8)

X	17	8	12	13	10	12
Y	13	7	10	11	8	9

- B)** Find the following data, find the regression equation and further estimate y when x = 16 and x if y = 18. (7)

X	3	4	6	10	12	13
Y	12	11	15	16	19	17

- Q.4A)** From the following data, Calculate (6)

i) I_L ii) I_P iii) I_F

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	2	20	3	30
B	4	15	5	20
C	3	40	6	50

- B)** State the limitations of Index Numbers. (5)
- C)** A box contains 5 blue and 4 red balls. 4 balls are selected at random from the box. Find the probability that (4)
- exactly 3 red balls are selected.
 - at least 3 red balls are selected.

OR

- Q.4 A)** What is the time series ? Describe any two components of a time series With suitable examples. (6)

- B) An unbiased coin is thrown 5 times and occurrence of 1 or 6 is considered As success. (3)
Find i) Probability of exactly 1 success.
ii) Mean
- C) A newspaper dealer buys newspapers for Rs. 2 each and sells them at Rs. 3 each. Any papers not sold at the end of the day are completely worthless. The dealer has kept a record of his sales for the past 100 days, which is given below. Find the number of copies he should stock So that the expected profit is maximum. (6)

Daily	300	400	500	600	700
No. Of days	15	20	45	15	5
Profit of each no. Being sold	0.15	0.20	0.45	0.15	0.05

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