Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BSM/SEM-1/BSM-102/2012-13

2012
STATISTICS-I

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) If A.M of 7, ($x - 2$), 10, ($x + 3$) is 9, the value of x is

   a) 6 b) 8

   c) 9 d) 15.

   ii) The G.M. of 6, 9, 36, 54 is

   a) 24 b) 34

   c) 18 d) 16.

   iii) The H.M of 4, 6, 12, 72 is

   a) 7·8 b) 8

   c) 5 d) 6.

   iv) The regression lines are $2x + 3y - 4 = 0$ and $x + 2y + 6 = 0$. The correlation coefficients between x and y is

   a) $\frac{3}{4}$ b) $\frac{-3}{4}$

   c) $\frac{4}{3}$ d) $\frac{-4}{3}$.

v) Mode of 15, 12, 5, 13, 12, 15, 8, 8, 9, 9 and 15 is

a) 12 b) 8

c) 15 d) None of these.

vi) The relation between Man, Median and Mode is

a) Mean – Mode = Median – Mean

b) Mean – Mode = 3 (Mean – Median)

c) Mean – Median = 3 (Mean – Median)

d) None of these.

vii) Standard deviation is dependent on

a) Origin only b) Scale only

c) both (a) and (b) d) None of these.

viii) The highest point of the frequency curve is

a) Mean b) Median

c) Mode d) None of these.

ix) Formula for Skewness is

a) $\frac{M_2}{M_3} - 2$ b) $\frac{M_3}{\left(\sqrt{M_2}\right)^3}$

c) $\frac{M_3}{\sqrt{M_3}}$ d) $\frac{M_4}{\left(\sqrt{M_3}\right)^3}$.

x) The S.D of a variable x is 10. Then S.D of ($5x - 10$)

a) 10 b) 30

c) 40 d) 50.

xi) The second moment about 4 of 2, 4, 6, 8 is

a) 2 b) 4

c) 6 d) 8.

GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following. 3 × 5 = 15

2. Construct the Grouped Frequency Distribution from the following and also find the cumulative frequency Distribution.

Marks Obtained	**No. of Students**
Below 10	15
Below 20	35
Below 10	60
Below 30	84
Below 40	106
Below 50	170
Below 60	125

3. Using the formula, the median of the following :

Class	130-134	135-139	140-144	145-149	150-154	155-159	160-164
Frequency	5	15	28	24	17	10	1

4. Find S.D of the following data:
   X : 0, 1, –1, –2, 6, 4, 5, 8, 12, 10, 11.
5. Distinguish between Primary data and Secondary data.
6. The weighted arithmetic mean of the four numbers 26, 18, and 4 is 16·4. If the weights of the first three numbers are 1, 3, 4 respectively, find the weight of the fourth number.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Calculate : 8

   (i) the number of cases between 112 and 134.

   (ii) Number less than 112

   (iii) Number greater than 134 from following :

Class Limit	90-100	100-110	110-120	120-130	130-140	140-150	150-160
Frequency	16	22	45	60	50	24	10

b) Show that if $\bar{x}$ is the arithmetic mean of the quantities $x_1, x_2 .... x_n$ then $\sum_1^n \left(x_i - \bar{x} \right) = 0$. 7

8. a) Calculate the coefficient of correlation from : 7

x	1	2	3	4	5
y	6	6	11	8	12

b) Find the regression of x any from the following data :

$\sum x = 24$ $\sum y = 44$ $\sum xy = 306$

$\sum x^2 = 164$ $\sum y^2 = 574$ $n = 4$. 8

9. a) The mean and the variance of a group of 100 students are 6·5 and 3·0 respectively. 55 of these students have mean 6·6 and S.D 1·5. Find the mean and S.D of the remaining 45 students. 8

b) Find the Standard deviation from the following data :
49, 63, 46, 59, 65, 52, 60, 54. 7

10. a) Find the missing frequency. If it is known that median height of the plant is 8·53 inches from the following.

Height (inches)	5·1-6·0	6·1-7·0	7·1-8·0	8·1-9·0	9·1-10	10·1-11	11·1-12·0
No. of Plants	3	8	27	?	17	11	9

8

b) Draw a multiple bar diagram of the following data :

Year	**Sale (.000 Rs)**	**Gross Profit (.000 Rs.)**	**Net Profit (.000 Rs)**
2002	120	40	20
2003	135	45	30
2004	140	55	35
2005	150	60	40

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