CS/BBA(H)/BIRM/BSCM/odd/Sem-1st/BBA-103/2014-15

BBA-103

STATISTICS - I

Time Allotted: 3 Hours

Full Marks: 70

The questions are of equal value.
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. Answer any *ten* questions. 10×1 = 10

(i) Standard deviation is dependent on

(A) origin only   (B) scale only

(C) both (A) and (B)   (D) none of these

(ii) The G.M. of 3, 12 and 48 is

(A) 12   (B) 9   (C) 6   (D) none of these

(iii) Correlation coefficient lies between

(A) – 1 to + 1   (B) 0 to 1   (C) 1 to 2   (D) none of these

(iv) For a distribution A.M. = 105, S.D. = 21. The coefficient of variation is

(A) 30%   (B) 20%   (C) 19.5%   (D) none of these

(v) The price index of the base year considered as

(A) 200   (B) 10   (C) 1000   (D) 100

(vi) The median of the following data

12, 5, 7, 10, 4, 9, 15, 14, 2 is

(A) 9   (B) 10   (C) 12   (D) 4

1156   1

(vii) $Y = a + bX$ in this regression equation, b is

(A) intercept   (B) slope   (C) variable   (D) random number

(viii) Which of the following methods will satisfy both time reversal and factor reversal test?

(A) Lasperye's method   (B) Paasche's method

(C) Fisher's ideal test   (D) Marshall-Edgeworth method

(ix) A graphical representation of a cumulative frequency distribution is called

(A) ogive   (B) cumulative frequency polygon

(C) both (A) and (B)   (D) none of these

(x) Which of the following is the measure of dispersion

(A) median   (B) mode   (C) mean deviation   (D) none of these

(xi) There are _____ models for describing a time series.

(A) 3   (B) 6   (C) 5   (D) none of these

(xii) Which of the following is false?

(A) $A.M. \times H.M. = (G.M.)^2$

(B) $A.M. \times H.M. = (G.M.)^3/(G.M.)$

(C) $A.M. \times H.M. = (G.M.)^4/(G.M.)$

(D) $A.M. \times H.M. = (G.M.) \times (A.M. \times H.M.)$

GROUP B
(Short Answer Type Questions)

Answer any *three* questions.   3×5 = 15

2. (a) Define primary data and secondary data with examples.   4+1
   (b) What is the relation between A.M., G.M. and H.M. of n observations.

3. Following data on the mode of transport, people use to get to their workplace, were obtained from a survey of 100 office-goers in a city:

Auto	Bus	Train	Taxi	Private Car
24	22	25	15	14

Draw an appropriate bar diagram for the above data.

4. What is the relation between mean, median and mode.
Find mode of the following data:

Monthly income(Rs)	1000 - 1500	1500 - 2000	2000 - 2500	2500 - 3000	3000 - 3500	3500 - 4000
No. of Workers	30	50	75	68	43	24

5. Find the missing frequency in the following frequency distribution when the mean is 11.09

Class limit	9.3-9.7	9.8-10.2	10.3-10.7	10.8-11.2	11.3-11.7	11.8-12.2	12.3-12.7	12.8-13.2	TOTAL
Frequency	2	5	?	?	14	6	3	1	60

6. If X_1, X_2 and X_3 are uncorrelated variables each having the same standard deviation, obtain the correlation coefficient between $X_1 + X_2$ and $X_2 + X_3$.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. $3 \times 15 = 45$

7. (a) The data below given is the marks secured by 63 candidates in a certain examination: $9+6$

21	31	35	52	64	74	89	53	42
22	35	43	67	76	35	46	26	32
72	43	38	41	63	71	28	32	45
15	18	52	73	86	50	39	55	47
44	58	67	85	39	40	50	65	72
57	63	5	56	79	37	24	54	82
51	54	68	29	34	44	58	62	59

Construct a frequency distribution of the marks, take classes of uniform width of 10 marks and 0 as the lower limit of the lower-most class.

(b) Construct Fisher's index number from the following data:

Item	Quantity		Price	
	2009	2010	2009	2010
A	10	12	12	15
B	5	10	8	10
C	12	16	10	12

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8. (a) The coefficient of rank correlation in between a sample of observations is 0.25. If   7+8
the sum of the squares of differences in ranks is 63, find the total number of
observations.

(b) Find correlation coefficient for the following data:

X	6	2	10	8	4
Y	9	11	5	7	8

9. (a) The weights (in kg) of 6 persons are 64, 60, 60, 64, 60 and 64. Calculate the mean   5+10
deviation about mean.

(b) Fit a trend equation to the following data by the method of least squares.

Year	1975	1976	1977	1978	1979
Production	83	92	71	90	169

Estimate also the production for 1980.

10.(a) The following data are given for marks in Statistics and Mathematics recorded at a   8+7
certain examination.

	Statistics	Mathematics
Mean Marks	36	85
S.D. Marks	11	8

Coefficient of correlation between marks is 0.66. Find two regression equations.

(b) Find quartile deviation from the following data:

Marks	35 - 36	36 - 37	37 - 38	38 - 39	39 - 40	40 - 41	41 – 42
Students	14	20	42	54	45	18	7

11.(a) Calculate the Skewness on the basis of mean, mode and standard deviation.   6+4+5

X: 14.5 16.5 17.5 18.5 19.5 20.5 21.5
F: 35   40   48   100   125   87   43   22

(b) Define time series and state the components of time series.

(c) The regression equations are $8x-10y+66=0$ and $40x-18y=214$
Find (i) $\bar{x}$ and $\bar{y}$ (ii) r.