

Seat No. : \_\_\_\_\_

**DB-112**

**December-2013**

**5 Years M.B.A. Integrated (K.S.) F.Y. M.B.A.**

**Basic Statistics**

**Time : 3 Hours]**

**[Max. Marks : 100**

1. Attempt any **two** :

(A) What are the different methods of collection of data ? What do you mean by a questionnaire ? **10**

(B) (i) Distinguish between Discrete and Continuous variables. **4**

(ii) If the class mid-points in a frequency distribution of a group of persons are :

125, 132, 139, 146, 153, 160, 167, 174, 181 pounds, find

(a) size of the class – intervals,

(b) the class boundaries and

(c) the class limits,

assuming that the weights are measured to the nearest pound. **6**

(C) (i) Present the following data by a range graph. **5**

**Minimum and Maximum Price of Gold for 10gms. for the year 1967.**

<b>Months</b>	<b>Highest Price ₹</b>	<b>Lowest Price ₹</b>
January	160.0	152.0
February	162.2	156.0
March	165.0	160.3
April	166.5	162.4
May	168.2	160.5
June	170.0	161.9
July	175.0	163.2
August	175.8	160.0
September	172.2	165.0
October	178.0	168.0
November	171.0	165.0
December	175.5	167.0

(ii) Differentiate between the natural scale and logarithmic scale used in graphic presentation of data. In which cases should the latter scale be used ? **5**

2. Attempt any **two** :

(A) (i) Arithmetic mean and median of 50 items are 100 and 95 respectively. At the time of calculations two items 180 and 90 were wrongly taken as 100 and 10. What are the correct values of mean and median ? **4**

- (ii) Below is given the distribution of heights of a group of 60 college students :

Height (in cms)	No. of students
145.0-149.9	2
150.0-154.9	5
155.0-159.9	9
160.0-164.9	15
165.0-169.9	16
170.0-174.9	7
175.0-179.9	5
180.0-184.9	1

Draw the histogram of the distribution and find the modal height therefrom. Check this result by using the formula. **6**

- (B) (i) Kishor travels 900 kms. by train at an average speed of 60 kms. per hour, 3000 kms. by steamship at an average of 25 kms. per hour, 400 kms. by aeroplane at 350 kms. per hour and finally 15 kms. by bus at 25 kms. per hour. Calculate his average speed for the entire journey. **4**
- (ii) Calculate median, first quartile and eighty-fifth percentile of the following data of incomes : **6**

Income in '00 ₹ :	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of families :	75	250	350	192	68	35	24	6

- (C) The following table gives the frequency distribution of the marks of 800 candidates in an examination : **10**

Marks :	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of Candidates :	10	40	80	140	170	130	100	70	40	20

Draw an ogive curve for the above data and answer the following from the graph : **10**

- (i) If the minimum marks required for passing are 35, what percentage of the candidates pass the examination ?
- (ii) It is decided to allow 80% of the candidates to pass, what should be the minimum marks for passing ?
- (iii) Find the median of the distribution.

3. Attempt any **two** :

(A) Age distribution of hundred life insurance policy holders is as follows :

Age as on nearest birthday	Number
17-19.5	9
20-25.5	16
26-35.5	12
36-40.5	26
41-50.5	14
51-55.5	12
56-60.5	6
61-70.5	5

Calculate coefficient of mean deviation from median age.

**10**

(B) (i) The shareholders research centre of India has conducted recently a research study on price behaviour of three leading industrial shares A, B and C for the period 1979 to 1985, the results of which are published as follows in its quarterly journal :

Share	Average Price	Standard Deviation	Current Selling price
A	18.2	5.4	36.00
B	22.5	4.5	34.75
C	24.0	6.0	39.00

The above figures are given in ₹

(a) Which share, in your opinion, appears to be more stable in value ?

(b) If you are the holder of all the three shares, which one would you like to dispose off at present, and why ?

**5**

(ii) Find the coefficient of skewness from the following information :

**5**

Difference of two quartiles = 8 ; Mode = 11, sum of two quartiles = 22, Mean = 8.

(C) The first four moments of a distribution about value 2 are 1, 2.5, 5.5 and 16 respectively. Calculate the four moments about mean and comment on the nature of the distribution.

**10**

4. Attempt any **two** :

(A) (i) Explain that the Laspeyres' Method has an upward bias while the Paasches method has a downward bias. Also point out, under what conditions they give equal results

**5**

(ii) Following table gives the cost of living index numbers for different commodity groups together with respective weights for 1994 (Base = 1971)

Group	Food	Clothing	Fuel & Lighting	Rent	Miscellaneous
Group Index	425	475	300	400	250
Group Weight	62	4	6	12	16

Obtain the overall cost of living index. Suppose a person was earning ₹ 600 in 1971. What should be his salary in 1994 if his standard of living in that year is to be the same as in 1971.

**5**

- (B) From the data below, construct the Fisher's ideal index number and verify whether it satisfies the time and factor reversal tests : 10

Commodity	Price/unit (in ₹)		No. of units	
	Base Year	Current Year	Base Year	Current Year
A	2	4	10	12
B	4	4	5	8
C	5	7	10	15
D	10	12	12	10
E	15	20	15	10

- (C) (i) Combine the two series of index numbers given below to obtain a new series with 4
- (a) 1963 = 100  
(b) 1960 = 100

Year	Wholesale Price Index	
	Old Series 1958 = 100	Revised Series 1963 = 100
1960	115	-
1961	117	-
1962	119	-
1963	123	100
1964	138	116
1965		126

- (ii) A textile worker in the city of Ahmedabad earns ₹ 750 p.m. The cost of living index for January, 1986 is given as 160. Using the following data, find out the amounts he spends on (a) food and (b) rent. 6

Group	Expenditure (₹)	Group Index
Food	?	190
Clothing	125	181
Rent	?	140
Fuel and Lighting	100	118
Miscellaneous	75	101

5. Attempt any two :

- (A) (i) At what ratio the point (0, 0) divides the line segment joining the points (-2, 0) and (4, 0) 5
- (ii) Show that the points (1, 1), (-1, 0) and (3, 2) are collinear. 5
- (B) (i) Find the equation of the line passing through the point (-2, 3) and having equal intercepts in magnitude but opposite in sign. 5
- (ii) Find the equation of the line passing through the intersection of the lines  $2x - 7y + 11 = 0$  and  $x + 3y - 8 = 0$ , and the line is perpendicular to  $2x - 5y + 6 = 0$ . 5
- (C) Determine the coordinates of the vertices of the triangle if the mid-points of its sides are (-2, 1), (5, 2) and (2, -3). 10