

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

**N25-117**

**December-2014**

**First Year MBA (KS) Integrated  
Basic Statistics**

**Time : 3 Hours]**

**[Max. Marks : 100**

**Instruction :** Graph paper shall be provided on demand.

1. Attempt any **two** :

(A) Distinguish between Primary and Secondary data. Give a brief account of the chief methods of collecting primary data. **10**

(B) Out of total number of 2807 women, who were interviewed for employment in a textile factory, 912 were from textile areas and the rest from non-textile areas. Amongst the married women, who belonged to textile areas, 347 were having some work experience and 173 did not have work experience, while for non-textile areas the corresponding figures were 199 and 670 respectively. The total number of women having no work experience was 1841 of who 311 resided in textile areas. Of the total number of women, 1418 were unmarried and of these the number of women having experience in the textile and non-textile areas was 254 and 166 respectively. **10**  
Tabulate the above information

(C) (i) Represent the following data by a deviation bar diagram : **5**

<b>Years</b>	<b>Income (in crores of ₹)</b>	<b>Expenditure (in crores of ₹)</b>
1994	15	18
1995	16	17
1996	17	16
1997	18	20
1998	19	17
1999	20	18

- (ii) Represent the following data by means of a time series graph. Show also the net balance of trade :

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Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>Export</b> (₹ '000)	267	269	263	275	270	280	282	272	265	266
<b>Import</b> (₹ '000)	307	310	280	260	275	271	280	280	260	265

2. Attempt any **two** :

- (A) A sample of batteries produced by Batco was tested for life and the following results were obtained :

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Life ( '000 kms)	No. of batteries	Life ( '000 kms)	No. of batteries
0 – 5	0	30 – 35	5
5 – 10	10	35 – 40	1
10 – 15	37		
15 – 20	53		
20- 25	29		
25 – 30	8		

Calculate the modal life of the batteries and verify your answer graphically.

- (B) The monthly salary distribution of 250 families in a certain locality in Agra is given below :

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Monthly Salary (₹)	No. of families
More than 0	250
More than 5000	200
More than 10000	120
More than 15000	80
More than 20000	55
More than 25000	30
More than 30000	15
More than 35000	5

**Find out :**

- (i) Limits of the income of middle 50% of the families.
- (ii) If income-tax is to be levied on families whose income exceeds ₹ 18,000 per month, calculate the percentage of families, which will be paying income-tax.
- (C) Find two numbers whose geometric mean is 18 and arithmetic mean is 19.5. Also, calculate their harmonic mean.

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3. Attempt any **two** :

- (A) Compare the dispersion of the following series by using the coefficient of mean deviation :

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Age (years)	16	17	18	19	20	21	22	23	24
No. of boys :	4	5	7	12	20	13	5	0	4
No. of girls :	2	0	4	8	15	10	6	3	2

- (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 2006 to 2013, the results of which are published as follows in the 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 holder of all the three shares, which one would you like to dispose of at present and why ? 5
- (ii) Explain the terms : 5
- (a) Skewness
- (b) Kurtosis
- (C) The first four moments of a distribution about 12 are : – 8, 210, – 42 and 5216 respectively. Examine skewness and kurtosis of the distribution. 10

4. Attempt any **four** : 20

- (A) From the following data about five commodities calculate weighted average of price relatives index using geometric mean :

Commodity	Unit	Quantity	Price	
			2011	2012
A	kg	150	25	28
B	Metre	48	160	200
C	Sq. ft.	125	50	50
D	kg.	88	40	32
E	Litre	140	16	24

- (B) The following information about prices and quantities for 2010 and 2012 is given :

Commodity	2010		2012	
	Price	Quantity	Price	Quantity
A	25	150	30	140
B	15	50	20	30
C	50	120	50	160
D	40	80	35	140
E	10	130	15	120

Show that Fishers' Index satisfies both time-reversal and factor-reversal tests.

- (C) Two sets of index numbers, one with 1996 (called A) as base and other with 2004 as the base (called B), are given here :

Year	Index A	Year	Index B
1996	100	2004	100
1997	110	2005	105
1998	120	2006	95
1999	190	2007	90
2000	260	2008	105
2001	300	2009	110
2002	360	2010	125
2003	380		
2004	400		

- Splice index B to index A.
- Shift the base year to 2010.

(D) Given the following data :

<b>Year</b>	<b>Average Monthly Pay (₹)</b>	<b>Consumer Price Index Number</b>
2006	25500	115
2007	26000	120
2008	27000	135
2009	28500	140
2010	30500	142
2011	38000	156
2012	40000	175

In which year did the employee have the highest purchasing power and what percentage increase in the monthly pay for the year 2012 is required to compensate him with the purchasing power in the year of his highest real pay ?

(E) The monthly income of a person is ₹ 21,000. It is given that the consumer price index number for a particular month is 136. Find out the amount spent by him on (i) food and (ii) clothing.

<b>Group</b>	<b>Expenditure</b>	<b>Index</b>
Food	—	180
Rent	2940	100
Clothing	—	150
Fuel and Power	3360	110
Miscellaneous	3780	80

5. Attempt any **four** :

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- (A) Find the coordinates of the circumcentre of a triangle whose coordinates are  $(3, -2)$ ,  $(4, 3)$  and  $(-6, 5)$ . Hence find the circum radius.
  - (B) Determine the coordinates of the vertices of the triangle ABC if the middle points of its sides BC, CA, AB have coordinates  $(3, 2)$ ,  $(-1, -2)$  and  $(5, -4)$  respectively.
  - (C) IF  $(-3, 4)$  is the centroid of the triangle whose vertices are  $(6, 2)$   $(x, 3)$  and  $(0, y)$ , find x and y.
  - (D) In a triangle with vertices A(0, 6), B(-2, -2) and C(4, 2), find the equation of the perpendicular bisector of the side BC.
  - (E) Find the equations of the straight lines through  $(4, -2)$  and at a perpendicular distance of 2 units from the origin.
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