

**DB-121****December-2018****F.Y. M.B.A. Integrated****Basic Statistics****Time : 2:30 Hours]****[Max. Marks : 70**

**Note :** Statistical tables will be provided on demand and use of scientific calculator is permitted.

1. Answer the following : (any **two**) **14**

(1) Differentiate between Questionnaire and Schedule.

(2) The frequency distribution table is given as under :

Class	0-5	5-15	15-30	30-50	50-80	80-100
Frequency	10	20	30	40	60	40

Obtain : (i) Relative Frequency Distribution (ii) Percentage Relative Frequency Distribution (iii) Proportionate Frequency Distribution and (iv) Frequency Density Distribution.

(3) 1200 workers out of 2000 workers in a factory were educated in the year 2007. 125 females were educated out of 300 female workers. The number of educated workers increased to 1500 out of which 1350 were males in the year 2008. The number of uneducated workers was 600 of which 50% were female workers. The total number of educated workers was 2100 and number of uneducated workers was 200 in the year 2009. 25 females were uneducated out of 300 female workers. Arrange this data in tabular form.

2. (A) Explain the following terms : **6**

(1) Arithmetic Mean

(2) Co-efficient of Variation

(3) Mode

(B) Solve the following : (any **one**) **8**

(1) Find median and mode for the following data :

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	4	16	60	100	40	6	4

(2) Find harmonic mean for the following data :

Class	10-20	20-30	30-40	40-50	50-60
Frequency	4	6	10	7	3

3. Answer the following : (any **two**)

14

- (1) Find mean, mean deviation and co-efficient of mean deviation from the following data :

<b>More than equal to</b>	45	50	55	60	65	70	75	80
<b>Cumulative Frequency</b>	100	90	75	50	25	15	5	0

- (2) Find the first four central moments for the observations 12, 13, 17, 18 and 20. Also find  $\beta_1$ ,  $\beta_2$ ,  $\gamma_1$   $\gamma_2$  and state the nature of the curve.

- (3) Find Karl Pearson's co-efficient of skewness for the following data :

<b>Class</b>	0-10	10-18	18-28	28-50	50-80
<b>Frequency</b>	2	6	13	15	14

4. Solve the following : (any **two**)

14

- (1) Convert the following fixed base chain index numbers into chain base index numbers :

<b>Year</b>	1945	1946	1947	1948	1949	1950
<b>Index Number</b>	100	140	280	350	250	300

- (2) Calculate the index numbers of Laspeyre, Paasche, Dorbish-Bowley, Fisher and Marshall-Edgeworth. Also show that Fisher's Index Number satisfies the time reversal test as well as factor reversal test :

<b>Commodity</b>	<b>Base Year</b>		<b>Current Year</b>	
	<b>Price (in ₹)</b>	<b>Quantity (in kg)</b>	<b>Price (in ₹)</b>	<b>Quantity (in kg)</b>
<b>A</b>	6	50	10	56
<b>B</b>	2	100	2	120
<b>C</b>	4	60	6	60
<b>D</b>	10	30	12	24
<b>E</b>	8	40	12	36

- (3) Calculate the index number by aggregate expenditure method and family budget method for the following data :

<b>Commodity</b>	<b>Consumption in 1960</b>	<b>Price in 1960</b>	<b>Price in 1970</b>
<b>Wheat</b>	15	12	24
<b>Rice</b>	10	18	45
<b>Bajra</b>	5	8	20
<b>Pulses</b>	3	12	36

5. Solve the following : (any **two**)

**14**

- (1) Prove that  $(3, 0)$ ,  $(4, 5)$ ,  $(-1, 4)$  and  $(-2, -1)$  are the vertices of a rhombus and the points  $(3, 2)$ ,  $(5, 4)$ ,  $(3, 6)$  and  $(1, 4)$  are the vertices of a square.
- (2) Prove that  $\left(\frac{3}{2}, \frac{1}{2}\right)$  is the circum centre of a triangle formed by the points  $(2, 4)$ ,  $(-2, 0)$  and  $(4, -2)$ .
- (3) Find the equation of a line with slope  $\frac{1}{3}$  and passing through  $(-2, 7)$ . Similarly, find the equation of another line with slope 3 and passing through  $(2, 5)$ .

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