

Subject : Business Mathematics & Statistics

Day : Thursday
Date : 13/10/2016

S.D.E.

Time : 11.00 AM TO 02.00 PM
Max Marks : 80 Total Pages : 3

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SAME** answer book.
- 4) Use of logarithmic, **Statistical** tables and **Pocket CALCULATOR** is allowed.

SECTION - I

Q.1 Attempt any **FOUR** of the following: **(16)**

- a) Draw ogive curves from the following distribution.

Class	50-55	55-60	60-65	65-70	70-75	75-80
f	05	10	22	30	16	12

- b) Find mean, median and mode for the following data:
71, 72, 75, 72, 73, 72, 74, 72, 70, 76.

- c) The table below shows a frequency distribution of the intelligence quotients of 90 school children.

Class	50-59	60-69	70-79	80-89	90-99	100-109
f	03	10	18	25	24	10

With reference to this table determine.

- i) Mid point of 3rd class.
 - ii) Width of any class.
 - iii) Frequency of 3rd class.
 - iv) Frequency density of 2nd class.
- d) Following is a frequency distribution of weights in kg;

Weights in kg	50-54	55-59	60-64	65-69	70-74
Frequency	02	17	29	21	01

Obtain:

- i) Class boundaries of each class
 - ii) Relative frequency of each class
- e) State the merits and demerits of median.
- f) Find first and third quartiles for the following frequency distribution"

Daily Wages (in Rs.)	30	35	40	45	50
No. of Workers	03	07	20	06	04

Q.2 Attempt any **FOUR** of the following: **(16)**

- a) i) If the ratio of two numbers is 4:7, the smallest is 24, find the highest.
ii) If 15 bulbs cost Rs. 750/-, find the cost of 30 bulbs.
- b) At what price should Maya cloth centres sells each of the sixty sarres, the cost price of each of which is Rs. 750/-, so as to get a profit equal to the selling price of ten sarees?

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- c) X and Y started business investing Rs. 30,000/- and Rs. 40,000/- respectively. At the end of the year they realised a profit of Rs. 17, 850/-, find share of each of the profit.
- d) If for an Arithmetic Progression (A. P) $t_7 = 30$, $t_{10} = 21$, then find t_5 .
- e) Two companies have shares of 12% at 124 and 16% at 145. In which of the shares would the investment be more profitable?
- f) A man sold two machines at Rs. 99,000/- each. On one, he gained 10% and on the other, he lost 10%. Find the percentage profit or loss in the total transaction.

SECTION-II

Q.3 Attempt any **FOUR** of the following: **(16)**

- a) Find the line of regression of Y on X from the following data:

X	2	4	6	8
Y	4	2	3	7

- b) Find mean deviation from mode and its coefficient for the following data:
26, 28, 30, 28, 27..
- c) State the properties of correlation coefficient.
- d) Find the range and coefficient of range for the following data:
22, 20, 25, 20, 28, 25, 30, 31, 32.
- e) If correlation coefficient between X and Y is 0.7529, find that between:
- i) $\frac{X-10}{20}$ and $\frac{Y-10}{30}$, ii) $X-3$ and $3Y$
- iii) $2X$ and $-5Y$ iv) $X-5$ and $6-Y$.
- f) For bivariate data we have $\bar{x} = 30$, $\bar{y} = 20$, $b_{yx} = \frac{1}{16}$ and $b_{xy} = 4$.
Find:
- i) Correlation coefficient between X and Y
- ii) Estimate X for Y = 27.

Q.4 Attempt any **FOUR** of the following: **(16)**

- a) Find the compound interest on Rs. 30,500/- for 3 years at 5% p.a.
- b) Find the value of:
- i) ${}^{18}P_3$ ii) ${}^{60}C_2$
- c) Find area and perimeter of a triangle whose sides are 6 cm, 8 cm, and 16 cm.
- d) Define column matrix and zero matrix.
- e) Find the simple interest on Rs. 6200/- for $3\frac{1}{2}$ years at 12% p.a.
- f) Find the value of following determinant.

$$\begin{vmatrix} 1 & -2 & 3 \\ 0 & -5 & 1 \\ 4 & 1 & 1 \end{vmatrix}$$

Q.5 A) Attempt any **TWO** of the following: **(08)**

- i) Calculate coefficient of correlation between X and Y for the following data:

X	3	5	4	6	2
Y	3	4	5	2	6

- ii) Calculate the coefficient of variation for the following data:

X	10	11	12	13	14
f	5	10	15	13	7

- iii) Calculate quartile deviation for the following data:

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	2	4	8	4	2

B) Attempt any **TWO** of the following: **(08)**

- i) Find x and y if:

$$\begin{bmatrix} x+y & y-3 \\ 3-2x & y-x \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ -5 & -1 \end{bmatrix}.$$

- ii) Solve the following equations by using method of determinants;
 $3x - 4y = 4$ and $x + 4y = 2$.

- iii) A machine is depreciated at rate of 20% on the reducing balance. The original cost was Rs. 2,00,000/- , find its cost after $7\frac{1}{2}$ years.

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