S.D.E.

F. Y. B. Com. (2008 Course) : SUMMER - 2019

SUBJECT : BUSINESS MATHEMATICS & STATISTICS

Day : Thursday
Date : 02/05/2019

Time : 11.00 AM TO 02.00 PM
Max. Marks : 80

S-2019-4678

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 curve for the following data:

Class	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	3	7	12	8	6	4

b) The number of errors per page of a book containing 100 pages gave the following frequency distribution.

No. of errors	0	1	2	3	4	5
No. of pages	2	15	18	35	20	10

Find median and mode for the above data.

c) Define Arithmetic mean (A.M.) and state its merits and demerits.

d) The following distribution of wages of 100 workers is given below:

Wage range	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of workers	5	20	40	25	10

Obtain : **i)** Class mark of last class
ii) Frequency of 3^{rd} class
iii) Frequency density of 4^{th} class
iv) Width of any class

e) Calculate first quartile and third quartile for the following frequency distribution.

Class	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	10	15	20	18	12

f) Find mean, median and mode for following data:
81, 82, 85, 83, 82, 84, 82, 80, 86.

Q.2 Attempt **ANY FOUR** of the following: **[16]**

a) The sum of present ages of three persons is 83 years. Five year ago, their ages were in the ratio 4:6:7. Find the present ages.

b) The partnership firm, which has three partners with respective capitals Rs. 5,000/-, Rs, 25,000/- and Rs. 15,000/- earns profit of Rs. 18,000/- in a year. How much each will get?

c) If for an Arithmetic Progression (A.P.)
$t_5 = 36$, $t_{10} = 16$, find S_{27}.

P.T.O.

d) Explain different types of share.

e) Find z and w if: **i)** 6 : 15 : : 2 : z **ii)** 15 : 27 : : w : 45

f) **i)** Find HCF of 72, 108.
ii) Find LCM of 12, 21 and 24.

SECTION – II

Q.3 Attempt **ANY FOUR** of the following: **[16]**

a) Find range and coefficient of range for the following data:
100, 45, 81, 22, 60, 43, 14, 37, 65, 16.

b) Find correlation coefficient between X and Y given that:
$n = 7$, $\Sigma X = 72$, $\Sigma Y = 204$, $\Sigma X^2 = 788$, $\Sigma Y^2 = 9248$, $\Sigma XY = 2380$.

c) Draw the scatter diagram and interpret the result:

X	44	80	70	48	52	72	68	56	60	64
Y	48	75	54	60	63	69	72	21	57	66

d) Calculate mean deviation from mean for the following data:
4, 6, 8, 12, 15.

e) Calculate the coefficient of correlation between X and Y.

X	12	9	8	10	11
Y	14	8	8	6	4

f) From an analysis of monthly wages of two factories, answer the following:
i) Which factory pays larger wage?
ii) Which factory pays higher average wages?
iii) Which factory wages are more consistent?

Factory	Sample size	Mean	Variance
A	220	600	100
B	600	485	144

Q.4 Attempt **ANY FOUR** of the following: **[16]**

a) A book seller purchased 800 copies of a book for Rs. 4,400/-. He sold 600 at a profit of 20% and remaining copies at a loss of 25%. Find percent profit or loss in the total transaction.

b) Find the value of: **i)** ${}^{7}P_4$ **ii)** ${}^{40}C_3$.

c) Define Zero matrix and Scalar matrix.

d) Find area of a square whose diagonal is of length 128 cm.

e) Find the rate of simple interest if the sum of money doubles itself in 10 years.

f) Find the compound interest of Rs. 13,500/- for four year at 10% p.a.

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Q.5 A) Attempt **ANY TWO** of the following: **[08]**

a) If correlation coefficient between X and Y is –0.80. find the correlation between following:

i) X and Y

ii) 2X and 3Y

iii) X – 10 and Y + 15

iv) $\frac{X}{2}$ and $\frac{Y}{-5}$

b) Compute regression coefficient of Y on X (b_{yx}) for the following:

$n = 100$, $\Sigma x = 6200$, $\Sigma y = 5300$, $\sigma_x = 10$, $\sigma_y = 12$, $\Sigma\left(x-\bar{x}\right)\left(y-\bar{y}\right) = 8000$.

Also find coefficient of variation of X.

c) For bivariate data we have $\bar{x} = 30$, $\bar{y} = 20$ $b_{yx} = \frac{1}{6}$ and $b_{xy} = 4$. Find:

i) Correlation coefficient between X and Y.

ii) Estimate X for Y = 27.

B) Attempt **ANY TWO** of the following: **[08]**

a) Find the area of a triangle whose sides are 5 cm, 5 cm and 6 cm.

b) If $A = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 4 \\ -1 & 3 \end{bmatrix}$, then find AB and BA.

c) Solve the following system of equations by using method of determinant.

$3x + 2y = 5$, $x - 47 = -3$

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