

S.D.E.

F. Y. B. COM. (2008 COURSE) : WINTER - 2017
SUBJECT : BUSINESS MATHEMATICS & STATISTICS

Day Wednesday
Date 01/11/2017

W-2017-3976

Time 11.00 AM TO 02.00 PM
Max. Marks : 80

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) Find the quartile deviation for the following

X	10	15	20	25	30
f	8	12	25	11	09

- b) Following is a frequency distribution of weights in kg

Class	50-55	55-60	60-65	65-70	70-75
Frequency	2	17	29	21	01

Obtain:

- i) Class boundaries of 3rd class ii) Midpoint of 2nd class
iii) Width of any class iv) Frequency of 4th class

- c) Find the mean and mode for the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequency	7	8	15	11	9

- d) State the merits and demerits of mode.

- e) Find the second quartile and third quartile for the following data:

Daily wages (in Rs.)	30	35	40	45	50
No. of workers	3	7	20	6	4

- f) Draw Histogram for the following data:

Classes	0-10	10-20	20-30	30-40	40-50
Frequency	05	20	32	24	04

P.T.O.

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

- a) A man sold two articles at ₹990 each on one he gained 20% and on the other, he lost 10%. Find the percentage profit or loss in the total transaction.
- b) Find the z and w if: i) $6 : 15 :: 2 : z$ ii) $15 : 27 :: w : 45$
- c) Two companies have shares of 12% at 124 and 16% at 145. In which of the shares would the investment be more profitable?
- d) Find t_{20} and S_{20} for following arithmetic progression (A.P)
2, 4, 6, 8, 10, ...
- e) In a partnership venture A invested ₹ 3,000, B invested ₹ 4,000 and C invested ₹8,000/-. At the end of the year net profit was ₹7,500/-. What would be the profit of each partner?
- f) i) Find LCM of 40, 80, 60 ii) Write fraction $\frac{3}{4}$ in a percentage.

SECTION – II

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

- a) For bivariate data we have $\bar{x} = 3, \bar{y} = 4, b_{yx} = 4, b_{xy} = \frac{1}{16}$
Find i) Correlation coefficient between X and Y.
 ii) Estimate Y for X= 6.
- b) Given that $r = 0.65$ $\text{cov}(x, y) = 13$ and $\sigma^2 x = 1$. Find σ_y .
- c) Calculate range and coefficient of range for the following frequency distribution

X	4	6	8	10	12	14
f	12	25	30	13	10	5

- d) Calculate mean deviation from mean for the following data:
28, 20, 27, 31, 24.
- e) Calculate coefficient of variation for the following data

Classes	0-10	10-20	20-30	30-40	40-50
Frequency	6	14	12	10	8

- f) State the merits and demerits of standard deviation.

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

- a) If $A = \begin{bmatrix} 6 & 4 \\ -3 & 9 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -9 \\ 8 & 0 \end{bmatrix}$, find $4A - 3B$.
- b) Solve the following equations by using method of determinants
 $3X - 3Y = 4$, $X + 4Y = 2$
- c) Find the area of a square with perimeter 200 m.
- d) Find the value of i) 7P_4 ii) ${}^{40}C_{37}$
- e) What sum will amount to ₹ 4,000 in 3 years at the rate of 6% p.a. compound interest?
- f) A certain sum amount to ₹ 10,000 in 4 years at the rate of 8% p.a. simple interest, find the sum.

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

- a) If correlation coefficient between X and Y is 0.80. Find the correlation coefficient between following:
1) X and $-Y$ 2) $4X$ and $6Y$ iii) $X-25$ and $Y+15$ iv) $\frac{X}{-5}$ and $\frac{Y}{-7}$
- b) Find the regression equation of X on Y for the following data

X	8	10	9	11	07
Y	8	9	10	07	11

- c) Information about the daily salaries of employees in firm A and B is given below:

Firm	No. of Employees	Mean Salary	S.D. of Salary
A	586	350	100
B	647	470	110

Which firm has smaller variation in salary?

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

- a) What is the order and type of the following matrices
i) $[3, 4, 5]$ ii) $\begin{bmatrix} 6 & 0 \\ 0 & 6 \end{bmatrix}$
- b) Define the following terms:
i) Principal ii) Amount
- c) A machine depreciates at rate of 20% on the reducing balance. The original cost was ₹1,50,000/- find the cost after 5 years.

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