

Class: FYBMS (Sem: 1)

Subject: Business Mathematics

[Time: $2\frac{1}{2}$ Hours]

Busi-Stats

[Marks: 75]

4.10.19



NOTE: i) All questions are compulsory.

ii) In Q.1, attempt both the sub-parts A and B.

iii) Figures to the right indicate marks.

iv) Use of non-programmable calculator is allowed.

v) Graph will be provided on request.

Q 1) A. Fill in the blanks with correct alternative. (any Eight) [8]

- The data which is collected by first hand source is known as _____.
(Information, secondary data, Primary data)
- The graphical representation of data joining the points by using a smooth curve is called as _____.
(Histogram, frequency polygon, frequency curve)
- The mid value of class interval is known as _____.
(median, decile, class width, class mark)
- If the value of coefficient of variation is more then the consistency of data is _____.
(more, less, equal)
- If coefficient of correlation between x and y is less than 0 then there is _____ correlation.
(positive, negative, none)
- An index depending the seasons is known as _____ index number.
(seasonal, price, fisher's)
- A variable X capable of taking discrete values $x_1, x_2, x_3, \dots, x_n$ with respective probabilities $p_1, p_2, p_3, \dots, p_n$ is called as _____ random variable.
(discrete, continuous, none of these)
- For statistical experiment set of all possible outcome is known as _____.
(sample space, sample, element)
- EMV stands for _____.
 - Equated Monetary Value
 - Equal Money Value
 - Equated Money Value
- In decision theory, regret table is obtained by subtracting _____ value of table from all values of given pay-off table.
(highest, lowest, none)

Q 1) B. State whether the following statements are True or False. (any seven) [7]

- A single numeric figure which represents whole data is known as range.
- Histogram is represented by vertical rectangles.
- Coefficient of variation is relative measure of dispersion.
- The difference between upper and lower quartiles is known as quartile deviation.
- The probability of an impossible event is one.
- Statistical gives an accurate result.
- The process of rearrangement is called as permutation.
- Laplace criterion is same as fisher's index.

- i) Kelly's index number is square root of laspeyre's index number.
 j) EMV is monetary value .

Q 2) A.

- i. Calculate third and seventh decile for the following data : [8]

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	6	2	4	10	12	8

- ii. Draw the more than ogive curve and also locate median for the following marks distribution : [7]

Marks	5-10	10-15	15-20	20-25	25-30	30-35
No. of students	3	8	11	4	7	4

[OR]

Q 2) B.

- i. Draw the Histogram and polygon for the following data : [8]

Units	0-10	10-20	20-30	30-40	40-50	50-60
No. of consumers	4	2	6	4	3	1

- ii. Find the missing frequency if the mean is 21.9. And also find fifth decile. [7]

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	2	5	---	13	21	16	8	3

Q 3) A.

- i. Calculate the mean deviation from mean and coefficient of M.D. for the following data: [8]

Age	2-4	4-6	6-8	8-10	10-12	12-14	14-16
No. of employees	2	4	9	3	7	1	2

- ii. Calculate spearman's coefficient of correlation for the following distribution: [7]

X	20	15	11	8	10	12
Y	10	40	20	25	35	22

[OR]

Q 3) B.

- i. Find regression equation of y on x for the following data and hence estimate y when x = 25 [8]

X	15	12	10	19	20	22
Y	19	17	14	27	29	31

- ii. Calculate Karl Pearson's coefficient of correlation for the following data : [7]

X	10	12	19	8	5	11
Y	15	18	21	10	6	17



Q 4) A.

- i. Fit a trend line by least square method and estimate the trend value for the year 2010. [10]

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Export in Rs. Lakhs	8	10	12	11	13	15	14	17	17

- ii. Calculate real income for the following data: [5]

Year	2002	2003	2004	2005	2006
Prices	100	105	110	120	125
income Rs.	800	819	825	876	920

[OR]

Q 4) B.

- i. Calculate the Laspeyre's and Paasche's index number for the following data : [8]

Commodity	Base year 1996		Current year 2006	
	Price	Quantity	Price	Quantity
Wheat	6	20	7	25
Rice	4	22	10	26
Sugar	9	35	15	31
Oil	4	12	19	10

- ii. Calculate 4 Yearly Moving Averages for the following data : [7]

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Sales	40	42	35	38	25	20	28	32	42	43

Q 5) A.

- i. A box contains 6 red, 4 blue and 9 green balls. 5 balls are selected at random from the box. Find the probability that i) atleast 2 blue balls are selected (ii) at most 4 red balls are selected. [5]

- ii. For the following pay-off table, find optimal decision using i) Hurwicz criterion (with $\alpha = 0.4$) (ii) Maximin criterion (iii) Maximax criterion (iv) Minimax Regret criterion. [10]

Courses of Action	States of Nature		
	S1	S2	S3
A1	10	16	9
A2	8	10	18
A3	9	12	20

[OR]



Q 5) B. Attempt any THREE from the following:

[15]

- i. Explain the primary data with its method of collection.
- ii. Explain probability with an example.
- iii. Write a short notes on family budget method.
- iv. Define for a random variable (i) Expectation (ii) Variance.
- v. Describe index number.

Wish You All The Best
