

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 paper will be provided on request.



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

[8]

- a. The data which is already collected and used by someone else is known as \_\_\_\_\_.  
(Information, secondary data, Primary data)
- b. The graphical representation of data joining the points by using straight lines is called as \_\_\_\_\_.  
(Histogram, frequency polygon, bar diagram)
- c. An observation having highest frequency is known as \_\_\_\_\_.  
(median, decile, mode)
- d. If the value of coefficient of variation is more then the consistency of data is \_\_\_\_\_.  
(more, less, equal)
- e. If coefficient of correlation between x and y is zero then there is \_\_\_\_\_ correlation.  
(positive, negative, none)
- f. An index depending the seasons is known as \_\_\_\_\_ index number.  
(seasonal, price, fisher's)
- g. 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)
- h. For statistical experiment set of all possible outcome is known as \_\_\_\_\_.  
(sample space, sample, element)
- i. EMV stands for \_\_\_\_\_.  
  - a) Equated Monetary Value
  - b) Equal Money Value
  - c) Equated Money Value
- j. 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 7)

[7]

- a) A single numeric figure which represents whole data is known as range.
- b) Pie diagram is represented by vertical rectangles.
- c) Coefficient of variation is relative measure of dispersion.
- d) The difference between upper and lower quartiles is known as quartile deviation.
- e) The probability of an impossible event is one.
- f) Statistical technique can be misused.
- g) The method of selection of whole group or some elements from a group without considering an order is known as combination.
- h) Pay-off is one of the component of decision theory.

- i) The coefficient of correlation is represented by  $r$ .  
 j) EOL stands for equated opportunity loss.

**Q 2) A.**

- i. Calculate third quartile and mode for the following data : [8]

Class	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	5	8	10	2	5	9

- ii. Draw the histogram and also locate the mode for the following marks distribution : [7]

Marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	5	8	10	15	7	9

[OR]

**Q 2) B.**

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

Units	0-100	100-200	200-300	300-400	400-500	500-600
No. of consumers	8	20	26	40	35	15

- ii. Find the missing frequency if the mean is 21.9 and third percentile. [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 standard deviation and coefficient of variation for the following data: [8]

Age	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of employees	20	35	39	50	48	40	32

- 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. A bag contains 7 white balls, 5 black balls and 4 red balls. If two balls are drawn at random from the bag, find the probability that (i) both the balls are white; (ii) one is black and other is red. [8]
- ii. Calculate real income for the following data: [7]

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



**OR**

**Q.4) B.**

- i. For a person 50 years of age, the tabulated annual premium for an Endowment policy for 20 years is Rs. 50.70 per thousand. A person wants to buy a policy with sum assured Rs. 3,00,000 and pay premium every month. The company adds extra 5% on the tabulated premium for the monthly payment but offers a reduction of Rs. 2 per thousand for a policy with sum assured more than Rs. 1,00,000. Find the net monthly premium that the person has to pay. [7]
- ii. Calculate the Fisher's index number for the following data : [8]

Commodity	Base year 1996		Current year 2006	
	Price	Quantity	Price	Quantity
Wheat	5	20	7	25
Rice	8	22	10	26
Sugar	9	35	15	31
Oil	14	12	19	10

**Q.5.**

- A. State the properties of normal distribution. [8]
- B. Explain policy lapse and paid up value in insurance. [7]

**OR**

**C. Write short notes on : (Any 3)**

1. Mathematical averages
2. Weighted index numbers
3. Merits of median
4. Scatter diagram
5. Merits and demerits of range

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[15]