



Course: Quantitative Methods-I

Course Code:

Maximum marks: 75

Duration: 2 ½Hrs

**Instructions:**

All questions are compulsory and carry equal marks

Figures to the right indicate full marks

**Q.1 A) Choose the correct alternative from the following (any 8)**

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- 1) Number of family members is example of \_\_\_\_ distribution.  
a) Discrete b) Continuous c) both a) and b) d) none of these
- 2) The method of plotting a points of the following graphs are similar  
a) Frequency polygon & C.f. Curve b) Frequency polygon & Histogram  
c) Frequency polygon & Frequency curve d) none of these
- 3) Which of the following is not measures of central tendency  
a) mean b) median c) mode d) standard deviation
- 4) The arithmetic mean of 7, 8, x, 11, 14, is x then x=  
a) 9 b) 9.5 c) 10 d) 10.5
- 5) If  $Q_1 = 10, Q_3 = 40$  then coefficient of quartile deviation is?  
a) 7 b) 0.7 c) 0.6 d) 6
- 6) Correlation lies between  
a) 0 to 1 b) -1 to 1 c) -1 to 0 d) none
- 7) Two unbiased coin is tossed simultaneously probability of getting at least one tail is  
a)  $1/4$  b)  $3/4$  c)  $1/2$  d)  $1/6$
- 8) For calculating surrender value the duration of policy is taken as the \_\_\_\_ between date of surrender and date of commencement  
a) Sum b) difference c) product d) none
- 9) Time given extra after due date of Premium is known as \_\_\_\_  
a) Maturity period b) Grace c) Lapse d) None
- 10) The year selected as reference period for comparison is \_\_\_\_  
a) Base year b) composite year

**B) State true or false.(any 7)**

- 1) Index number for the base year is always zero.
- 2) Standard deviation is equal to the square root of variance.
- 3) Coefficient of correlation lies between -1 and + 1.
- 4) Insurance premiums can be paid monthly.
- 5) Class-mark of the interval 10-20 is 15.
- 6) Probability of an event can be negative.
- 7) Mean deviation can be obtained from arithmetic mean.
- 8) Supply and price of any commodity are positively correlated.
- 9) Diagrams and graphs are pictorial representation of tabular data w a common man.
- 10) Mode = 3 mean - 2 median

**Q.2) A) Explain Systematic sampling and multi stage sampling**

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**OR**

Explain the concept of statistical error

**B) Find the median of the following**

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	4	9	19	20	18	6	2	1	1	0

**OR**

Find  $D_1, D_3, D_7$  for the following 12, 26, 24, 20, 29, 36, 21, 35, 33

**Q.3) A) Define Range and coefficient of range and find it for the following data**

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50, 20, 30, 20, 10, 80, 100

**OR**

Find the quartile deviation of 20, 25, 40, 12, 31, 15, 60

**B) Explain types of correlation and scatter diagram**

**OR**

Find the lines of regression for the following x on y and y on x for the following

X	15	17	19	22	25	26
y	10	11	13	14	16	17

**Q.4) A) A bag contains 10 white balls and 11 black balls. If 2 balls are drawn simultaneously from bag. Find the probability of getting i) both the balls are white ii) one white and one black**

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**OR**

Find the expected value and variance for the following probability distributions

X	-2	-1	0	1	2	3
P(x)	0.1	0.1	0.2	0.2	0.3	0.1

B) Explain Index number.

OR

Construct index number using Laspeyre's and Pasche's method

Commodity	Base Year		Current Year	
	$p_0$	$q_0$	$p_1$	$q_1$
A	2	3	4	5
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

Q.5) Attempt any three

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- Explain Insurance
- Define the following 1) Bonus 2) maturity value 3) Lapse
- A person 35 years of age wishes to take an endowment policy for 25 years of Rs.200000. The tabulated annual premium for the policy is Rs.39.50 per thousand. He wants to pay monthly premium. The company add extra 2%. On the tabulated premium for the monthly mode of payment and an extra 2 per thousand is added if the age of person is more than 30 years at the time of insurance. Find the net premium.
- A person took policy of RS.100000 with tabulated premium rate of RS 35.05 per thousand. He has to pay extra RS.2 per thousand. Due to his physical impairment company offers a reduction of RS.3 per thousand for policy with sum assured more than RS.50000. Find the net quarterly premium that the person has to pay