VCD - 28/11/19 FYIM SEM I

Marks:75 Quantitative Techniques. Time: $2\frac{1}{2}$ *Hrs.*

N.B.: 1. All questions are compulsory.

2. Figures to the right indicate maximum marks allotted to the sub-questions.

3. Use of simple calculator is allowed.

Q.1] A] Attempt **any eight** multiple choice questions: [08]

1. For first year simple interest and compound interest are _____.

a) less b) more c) same d) none

2. The point at which there is no profit and no loss is called the _____

a). balancing point b). break even point

c). equilibrium point d). turning point.

3. The median of a given frequency distribution is found graphically with the help of _____.

a). Histogram b). Simple bar diagram

c). Frequency polygon d). Ogive.

4. In case of extreme values the best measure of central tendency is _____.

a) A.M. b) Median c) Mode d)None of the above

5. For finding correlation between two attributes we consider _____.

a) Pearson's correlation coefficient

b) Spearman's rank correlation coefficient

c) Both a and b

d) None of the above

6. Two samples A and B have the same standard deviation but the mean of A is greater than that of B the coefficient of variation of A is

a) Greater than that of B b) Less than that of B

c) Equal to that of B d) None of these

7. The demand is called inelastic if the price elasticity of demand is_____.

a) Greater than one b) Zero

c) one d) between Zero and One

8. Two regression equations become identical when _____.

a) r = 1 b) r = -1 c) Both A and B d) None of the above

9. A statistical measure, calculate for all objects in the population is called as _____.

a) Parameter b) Attribute c) Variable d) None of these

10. A function of the form $f(x) = 2x - 3$ is called _____ function.

a) constant b) linear c) quadratic d) polynomial.

B] Attempt **any seven** True or False: [07]

1. Two regression lines do not have any common point.

2. Demand function is an increasing function.

3. Range calculates the difference between two middle observations.

4. Increase in frequency of compounding within a year with decrease in maturity amount.

5. Correlation coefficient is not affected by change of scale and origin.

6. An annuity in which the number of payments are fixed is called certain annuity.

7. Standard deviation is equal to the square root of the variance.

8. Derivative of constant function is always zero.

9. Any finite set of objects selected from a population is called sample.

10. The difference between extreme values of a class interval is called length of class interval

Q.2 A] The following data gives the consumption of electricity. Represent it by Histogram and frequency polygon. [7]

Number of units	0-20	20-40	40-60	60-80	80-100	100-120
Number of customer	15	20	30	45	35	10

B] Find the Mean and Mode for following data: [8]

Weight in gms	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190
Frequency	1	8	12	18	22	9	7	8

OR

C] Draw 'less than' curve for the following data. [7]

Age in years	10-14	14-18	18-22	22-26	26-30
No,. of insaurance policy holder	10	13	15	30	20

D] The distribution of height of 100 children is given below. Find the D_7 and P_{87}. [8]

Height in cms.	130-135	135-140	140-145	145-150	150-155	155-160	160-165
No.of children	8	10	20	25	15	12	10

Q.3) A] The following data gives the frequency of divorces of couples in America. Find standard deviation . [7]

Period in months	0-6	6-12	12-18	18-24	24-30	30-36	36-42	42-48
No. of couples.	32	45	50	20	10	15	08	20

B] Calculate Karl Pearson's coefficient of correlation from the following data: [8]

X	18	12	16	14	10	15	17	13
Y	9	13	20	15	11	24	26	22

OR

C] Calculate the quartile deviation and coefficient of quartile deviation for the following data giving the life of 500 tubes. [7]

Life in hours	600-800	800-1000	1000-1200	1200-1400	1400-1600
No. of tubes	20	60	80	30	10

D] Find two regression equations for the following data and hence estimate Y when X=15 and X when Y=18. [8]

X	10	12	14	19	8	11	17
Y	20	24	25	21	16	22	20

Q.4) A] The simple interest on Rs.6,000 for 4 years at 10% p.a. is same as interest on Rs.10,000 for a number of years at 8% p.a. Find the number of years. [7]

B] A company decides to set up a small production plant for manufacturing shoes. The fixed cost for the set-up is Rs. 9 lakhs. The variable cost per pair of shoes is Rs. 300. Each pair of shoes is sold at Rs. 750. Find the total function, total revenue function, the profit function and break-even point. [8]

OR

C] A TV set is purchased for Rs.25,00 down payment and 4 equal instalment of Rs.20,000 at the end of each of the next 4 years. If the compound interest charged is at 12% p.a., Find the present cash price of the TV set. [7]

D] The cost function is given by $C = 3x^3 + 5x^2 + 4$. Find the average cost, the marginal cost and average marginal cost when $x = 4$. [8]

Q.5) A] What are the requisites of a good measure of dispersion? [7]

B] Define the annuity and explain types of annuity. [8]

OR

Q.5] Write short note on **any three**: [15]

i) Primary data

ii) Merits & Demerits of Median

iii) EMI

iv) Types of function.

v) Properties of regression

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