Name:			
Enrolment No:			

UPES
Supplementary Examination, December 2023

Course: Statistical Methods for Economics   **Semester:** IV
Program: B.A. Economics (Hons)   **Time: 03 hrs**
Course Code: ECON2020   **Max. Marks: 100**

SECTION A
10Qx2M=20Marks

S. No.		Marks	CO
Q 1	For symmetrical distribution (a) Mean=Median=Mode (b) Mean<Median<Mode (c) Mode=3Median-2Mean (d) Mean>Median>Mode	2	CO1
Q2	Which of the following statements is suited for the coefficient of variation? (a) A measure of central tendency (b) A measure of variation used when two samples have different units (c) The squared value of the standard deviation (d) To predict the value of dependent variable for given value of independent variable	2	CO1
Q3	Find the value of correlation coefficient if bXY=0.8 and bYX=0.4	2	CO1

Q4	Determine which of the following are true?
	    (a) When the sample size is large, the mean of X is approximately equal to the mean of X.
	    (b) When the sample size is large, X is approximately normally distributed.
	    (c) Only b is true.
	    (d) Both a and b are true.
		2	CO1

Q5	For a recent year, the number of visitors (in millions) to the top seven websites is shown. Find the median for the data. 148, 155, 241, 203, 180, 184, 186	2	CO1
Q6	The number of cable modem connections in millions for a select 6-year period are shown. Find the range. 55, 38, 14, 46, 60, 51	2	CO1
Q7	In correlational analysis, when the points scatter widely about the regression line, this means that the correlation is- (a) negative. (b) low. (c) heterogeneous. (d) between two measures that are unreliable.	2	CO1
Q8	"Duration (amount of time)" is what type of data? (a) qualitative (categorical). (b) quantitative discrete. (c) quantitative continuous. (d) Both a and b are true.	2	CO1
Q9	A study was done to determine the age, number of times per week, and the duration (amount of time) of residents using a local park in Dehradun. The first house in the neighborhood around the park was selected randomly and then every eighth house in the neighborhood around the park was interviewed. The sampling method was: (a) simple random (b) systematic (c) stratified (d) cluster	2	CO1
Q10	The correlation coefficient for X and Y is known to be zero. We then can conclude that: (a) X and Y have standard distributions. (b) the variances of X and Y are equal. (c) there exists no relationship between X and Y. (d) there exists no linear relationship between X and Y.	2	CO1

	SECTION B		
	4Qx5M= 20 Marks		
Q 11	The sulfur dioxide content of the air in millions of tons in five randomly selected cities is shown. Find the variance and standard deviation for the data. 11, 90, 33, 49, 27	5	CO2
Q12	What is the difference between Skewness and Kurtosis. Also discuss its different types.	5	CO2
Q13	Discuss briefly the distinction between correlation and causality.	5	CO2
Q14	Define a t Test of a Regression Coefficient and give a unique example of its use.	5	CO2
	SECTION-C		
	3Qx10M=30 Marks		
Q 15	A large population has skewed data with a mean of 70 and a standard deviation of 6. Samples of size 100 are taken, and the distribution of the means of these samples is analyzed. Then answer the following- (a) Will the distribution of the means be closer to a normal distribution than the distribution of the population? (b) Will the mean of the means of the samples remain close to 70? (c)Will the distribution of the means have a smaller standard deviation? (d) What is that standard deviation?	10	CO3
Q16	Discuss the difference between Skewness and Kurtosis. Also discuss its different types.	10	CO3
Q17	Find the sample variance and the sample standard deviation for the frequency distribution of the data shown. The data represents the number of miles that 20 runners ran for one week. | Class	Frequency	Midpoint
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5.5–10.5	1	8
10.5–15.5	2	13
15.5–20.5	3	18
20.5–25.5	5	23
25.5–30.5	4	28
30.5–35.5	3	33
35.5–40.5	2	38		10	CO3

	SECTION-D **2Qx15M= 30 Marks**		
Q18	A medical investigation claims that the average number of infections per week at a hospital in Delhi is 16.3. A random sample of 10 weeks had a mean number of 17.7 infections. The sample standard deviation is 1.8. Is there enough evidence to reject the investigator's claim at α = 0.05? Assume the variable is normally distributed.	**15**	**CO4**

Q19	An economist is interested in the possible influence of "Miracle Wheat" on the average yield of wheat in a district. To do so he fits a linear regression of average yield per year against year after introduction of "Miracle Wheat" for a ten-year period.
	
	The fitted trend line is
	
	Y_j estimated $=80+1.5 \cdot X_j$
	
	Here,
	(Y_j; Average yield in j year after introduction) &
	
	(X_j; j year after introduction).
	
	  (a) What is the estimated average yield for the fourth year after introduction?
	  (b) Do you want to use this trend line to estimate yield for, say, 20 years after introduction? Why? What would your estimate be?
		7+8=15	**CO4**