[This question paper contains 4 pages]

Roll No. ……

Unique Paper Code: 61011104(OC)

Name of the Course: Bachelor of Management Studies (BMS)

Semester: I

Name of the Paper: Statistics for Business Decisions

Duration: 3 Hours

Maximum Marks: 75 Marks

Instructions for Candidates

1. Attempt any four questions.
2. All questions carry equal marks.
3. Show your working clearly in your answer sheet

Q 1. How is the coefficient of variation different from variance? Following data pertains to the monthly sales of water purifiers during a year by 3 salespersons A, B, and C:

Salesperson	Sale of Water Purifier											
A	70	67	72	62	65	70	65	70	60	64	68	73
B	55	60	57	55	65	60	55	52	62	60	48	53
C	63	58	71	62	69	57	65	64	56	72	77	65

Calculate the C.V. in each case and discuss the relative consistency of the 3 salespersons.
If each of the values in respect of salesperson A is decreased by 10, and each of the values in respect of salesperson B is increased by 50 while each of the values in respect of salesperson C is multiplied by 2, how will it affect the results obtained earlier?

Q 2. The following table gives the distribution of monthly wages of 500 workers in a factory:

Monthly wages (in Rs)	1,500-2,000	2,000-2500	2500-3000	3,000-3,500	3,500-4,000	4,000-4,500
No. of workers	10	25	145	220	70	30

Find the Karl Pearson's coefficient of skewness. Calculate the first four central moments and the beta coefficient of skewness and comment on the result.

Q 3. Given below is the Consumer Price Index from September 2019 to August 2020:

Month	CPI
Sep 19	140
Oct 19	141
Nov 19	143
Dec 19	141
Jan 20	136
Feb 20	139
Mar 20	144
Apr 20	149
May 20	152
June 20	160
July 20	162
Aug 20	175

Calculate a new Index, with September 2019 as Base month. For the new index, fit a linear trend and predict the value for January 2021.

Q 4. For data given below, calculate the two linear regression equations and find out the coefficient of correlation:

Gross Domestic Product (Rs. '000 crore)	Gross Saving (Rs. '000 crore)
11233	3608
12467	4019
13771	4282
15391	4825
17098	5538
18971	5712

If the GDP rises to Rs. 20630 thousand crore, what will be the Gross Savings?

Q 5.What is testing of hypothesis? Differentiate between type I and type II errors in testing of hypothesis. Sample surveys conducted in a large country in a certain year and again 20 years later showed that originally the average height of 400 ten year old boys was 53.8 inches with a standard deviation of 2.4 inches. Whereas 20 years later the average height of 500 ten year old boys was 54.5 inches with a standard deviation of 2.5 inches. At 0.05 level of significance test the null hypothesis that the first population lacks from the second in 0.5 value against the assumption that the value is less.

Q 6. What is a random variable? Give some real life examples of discrete and continuous type random variables. Scores made on a certain aptitude test by students of an undergraduate course are approximately normally distributed with a mean of 490 and a variance of 10,000.
(a) 95 percent of the candidates scored less than what score?
(b) A person is about to take the test. What is the probability that he or she will make a score of650 or more?
(c) What proportion of scores fall between 340 and 680?