SOMAIYA VIDYAVIHAR UNIVERSITY

Semester: June – Sep 24 **Maximum Marks: 50 Examination: ETE Exam Date: 11/11/2024 Duration: 2 Hours**		
Programme code: 6 **Programme: MBA HCM**	**Class:** FY	**Semester/Trimester: I**
College: K. J. Somaiya Institute of Management	**Name of the department/Section/Center: Business Analytics**	
Course Code: 317P06C110	**Name of the Course: Statistical Analysis**	

Instructions:

1. **All questions are compulsory. There is an internal choice in Question 3.**
2. **Make suitable assumptions if required and state them.**
3. **Write all relevant answers and interpretations in your Excel sheet, with sufficient details in an easily readable manner to enable a fast evaluation of your answers.**
4. **Keep saving the file every ten minutes or so.**
5. **Make only 1 Excel file with different worksheets pertaining to each question.**
6. **Name the file with your division no., name and roll number.**

Question No.		Max. Marks
1	In a study of 256 randomly sampled nursing home residents, researchers find a mean low-density lipoprotein (LDL) cholesterol level of 148 mg/dL. The sample standard deviation is 20 mg/dL. Is this evidence consistent with the hypothesis that the mean population LDL cholesterol level is at least 150 mg/dL, assuming you adopt a significance level of $\alpha = 0.05$? a. State the null and alternative hypotheses b. Calculate the test statistic c. State the decision criteria for the given hypotheses d. State the conclusion in the context of the problem	20
2	A recent study published in a health journal analyzed the hospital stay length for patients recovering from COVID-19. From a random sample of 300 patients in various hospitals, the average length of stay was found to be 14.5 days, with a sample standard deviation of 6.2 days. a. Construct 95% and 99% confidence interval for the mean hospital stay of COVID-19 patients. b. Suppose the similar study is conducted for a random sample of 500 patients. Calculate the new 95% and 99% confidence intervals for the population mean using the same population mean 14.5 days, and standard deviation 6.2 days. c. Discuss how the confidence interval changes with an increased sample size.	20
3	Assume that adult diastolic blood pressure is normally distributed with a mean of 75mm hg, and a standard deviation of 5mm hg. a. Generate the normal distribution probabilities for the diastolic blood pressure in one -mm hg units, including atleast 3 standard deviations on each side of the mean. b. Develop an Excel Chart to show the frequency distribution generated in (a) **OR**	10

	Health insurers are increasingly offering telemedicine services as a replacement for traditional office visits. Wellpoint claims that users of its LiveHealth Online service save a significant amount of money on each doctor visit compared to in-office visits. Data from previous survey indicate the average saving per telemedicine visit is 70 dollars with a standard deviation of 11. (a) What is the probability that the average savings per telemedicine visit is now more than 75 dollars. (b) Assume Wellpoint wants to conduct a follow-up study to estimate the mean savings with a margin of error of $5 at the 95% confidence level. Determine the minimum sample size required to achieve this margin of error, using the standard deviation calculated from the sample given below 92,105,56,76,93,78,53,34,83,49,48,74,93,82,40,55,40,96,73,100	