SOMAIYA
VIDYAVIHAR UNIVERSITY

Semester: June – Sep 24	
Maximum Marks: 50 **Examination: ETE Exam** **Date: 4/11/2024** **Duration: 2 Hours**	

Programme code: 01 **Programme: MBA**	**Class:** FY	**Semester/Trimester: I**
College: K. J. Somaiya Institute of Management	**Name of the department/Section/Center: Business Analytics**	
Course Code: 317P01C101	**Name of the Course: Business Statistics**	

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	A parking control officer is conducting an analysis of the amount of time the cars left on parking meters. It was claimed that the average time that the cars left on parking meters is 20 minutes. The timing of 15 cars that have just left their metered parking space was recorded. Refer ***Ques 1 Worksheet*** *in Excel File BS Data Set 6* for the timing. Can the parking control officer conclude that the average parking time is less than 20 minutes at 1% level of significance? 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	**Unhealthy Days in Cities** The number of unhealthy days based on the AQI (Air Quality Index) for a random sample of 10 metropolitan areas is shown below. *Refer to **Ques 2 Worksheet** in Excel File BS Data Set 6.* 61 12 6 40 27 38 93 5 13 40 a. Estimate and interpret the population mean unhealthy days with 95%, 96%, and 98% confidence. b. Compute the interval width. c. What difference would it make to the interval width if the sample size drawn is 40, the confidence level is 98%, and the standard deviation remains the same? Explain your findings.	20
3	Television viewing reached a new high when the Nielsen Company reported a mean daily viewing time of 8.35 hours per household (USA Today, November 11, 2009). Use a normal probability distribution with a standard deviation of 2.5 hours to answer the following questions about daily television viewing per household. a. What is the probability that a household views television between 5 and 10 hours a day? b. How many hours of television viewing must a household have in order to be in the top 3% of all television viewing households? c. What is the probability that a household views television more than 3 hours a day? d. What is the probability that a household views television less than 1 hours a day **OR** The manager of a popular restaurant chain in Bengaluru is concerned about the frequency of customer complaints. Previous data indicates that the average number of complaints is around 8 per hour, with a population standard deviation of 2 complaints. To better understand the	10

current situation, she randomly sampled 100 hours of restaurant operation.

a. What is the probability that the average number of complaints are less than 7 per hour?

b. To accurately estimate the average number of complaints, the manager wants a margin of error of ±1 complaint with 95% confidence. Calculate the required sample size to achieve the desired margin of error.