SOMAIYA VIDYAVIHAR UNIVERSITY

Semester: May – June 24 **Maximum Marks: 50** **Examination: ETE Exam** **Date:** **Duration: 2.5 Hrs**		
Programme code: 18 **Programme: MBA for Working Executives Batch 02 (MBAWE02) (Div 1 & 2)**	**Class:** FY	**Semester/Trimester: I**
College: K. J. Somaiya Institute of Management	**Name of the department/Section/Center:** Business Analytics	
Course Code: 117P18C108	**Name of the Course: Business Statistics**	

Instructions:

- **There are 4 questions in all. All questions are compulsory.**
- **Q1 – Q3 carry 10 mark each. Q4 carries 20 marks.**
- **All subparts to a question must be answered.**
- **Make suitable assumptions if required and state them.**
- **Make only 1 Excel file with different worksheets pertaining to each question.**
- **All attempted questions must be solved entirely using MS Excel. All relevant analyses and interpretations should also be stated in the Excel worksheet itself.**

Question No.		Max. Marks
Q1	The manager of paint supply store wants to estimate the actual amount of paint contained in 1-gallon cans purchased from a nationally known manufacturer. It is known from the manufacturer's specifications that the standard deviation of the amount paint is equal to 0.02 gallon. A random sample of 50 cans is selected, and the sample mean amount of paint per 1-gallon can is 0.995 gallon. a. Construct a 95% confidence interval estimate of the population mean amount of paint included in a 1-gallon can. b. Construct a 99% confidence interval estimate of the population mean amount of paint included in a 1-gallon can. c. Construct a 90% confidence interval estimate of the population mean amount of paint included in a 1-gallon can. d. Compare the 3 results in (a) and (b)	10
Q2	The number of shares traded daily on the New York Stock Exchange (NYSE) is referred to as the volume trading. On April 23, 2004, 1.395 billion shares of stock were traded. This volume of trading is near the mean volume for the NYSE. Assume that the number of shares traded on the NYSE is a normal random variable with a mean of 1.4 billion and a standard deviation of 0.15 billion. For a randomly selected day, what is the probability that the volume of trading on the NYSE is: a. Below 1.7 billion? b. Between 1.25 to 1.5 billion? c. Below 1.0 billion? d. Above 1.0 billion?	10

<table>
<tr><td>Q3</td><td>A. The manufacturer of cans of salmon tells you that the net weight of a can is actually a normal random variable with a mean of 6.05 ounces and a standard deviation of 0.18 ounces. Suppose that you draw a random sample of 36 cans.
i. Find the probability that a randomly selected can will weigh less than 6
ii. Find the probability that the mean weight of the sample of 36 cans is less than 5.97 ounces.

B. A lumber company has just acquired the rights to a large tract of land containing thousands of trees. A lumber company needs to be able to estimate the amount of lumber it can harvest in a tract of land to determine whether the effort will be profitable. To do so, it must estimate the mean diameter of the trees. It decides to estimate that parameter to within 1 inch with 90% confidence. A forester familiar with the territory guesses that the diameters of the trees are normally distributed with a standard deviation of 6 inches. Determine how many trees should the forester sample.</td><td>10</td></tr>
<tr><td>Q4</td><td>In New York state, savings banks are permitted to sell a form of life insurance called saving bank life insurance (SBLI). The approval process consists of underwriting, which includes a review of the application, medical information and medical exams, and a policy complication stage during which the policy pages are generated and sent to the customers in a timely manner is critical to the profitability of this service to the bank. During a period of one month, a random sample of 27 approved policies of bank XYZ was selected and the total processing time in days was recorded in the Excel worksheet - “Insurance Data” of the dataset provided with this question paper.

a. Comment on the shape of the data given
b. Compute the mean, median, first quartile, and third quartile.
c. Compute the range; inter quartile range, variance, standard deviation and coefficient of variation.
d. Use, the above measures to comment on the following:
i. What would you tell a customer who enters the bank to purchase this type of insurance policy and asks how long the approval process takes?
ii. Assume the customer has collected similar data across other competitor banks providing the same insurance. The mean and standard deviation of the processing time of insurance for the competitor banks is given below. What would be your advice to the customer? Should the customer prefer bank XYZ or one of the competitor banks? Use relevant measures to compare and justify your answer.

<table><tr><th></th><th>Average time taken to process insurance</th><th>Standard Deviation of time taken to process insurance</th></tr><tr><td>Competitor Bank 1</td><td>42 days</td><td>27 days</td></tr><tr><td>Competitor Bank 2</td><td>44 days</td><td>23 days</td></tr></table></td><td>20</td></tr>
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********** All the Best **********