Problem 1

Cold Storage started its operations in Jan 2016. They are in the business of storing Pasteurized Fresh Whole or Skimmed Milk, Sweet Cream, Flavoured Milk Drinks. To ensure that there is no change of texture, body appearance, separation of fats the optimal temperature to be maintained is between 2º - 4º C.

In the first year of business they outsourced the plant maintenance work to a professional company with stiff penalty clauses. It was agreed that if the it was statistically proven that probability of temperature going outside the 2º - 4º C during the one-year contract was above 2.5% and less than 5% then the penalty would be 10% of AMC (annual maintenance case). In case it exceeded 5% then the penalty would be 25% of the AMC fee. The average temperature data at date level is given in the file "Cold_Storage_Temp_Data_.csv"

1. Find mean cold storage temperature for Summer, Winter and Rainy Season. (7 marks)
2. Find overall mean for the full year. (7 marks)
3. Find Standard Deviation for the full year. (7 marks)
4. Assume Normal distribution, what is the probability of temperature having fallen below 2º C? (7 marks)
5. Assume Normal distribution, what is the probability of temperature having gone above 4º C? (7 marks)
6. What will be the penalty for the AMC Company? (5 marks)

Dataset to be used for Problem 1: Cold_Storage_Temp_Data_.csv

Problem 2

In Mar 2018, Cold Storage started getting complaints from their Clients that they have been getting complaints from end consumers of the dairy products going sour and often smelling. On getting these complaints, the supervisor pulls out data of last 35 days' temperatures. As a safety measure, the Supervisor has been vigilant to maintain the temperature equal to 3.9º C.

Assume 3.9º C as the acceptable temperature and at alpha = 0.1 do you feel that there is need for some corrective action in the Cold Storage Plant or is it that the problem is from procurement side from where Cold Storage is getting the Dairy Products. The data of the last 35 days is in "Cold_Storage_Mar2018_.csv"

1. Which Hypothesis test shall be performed to check the if corrective action is needed at the cold storage plant? Justify your answer. (6 marks)
2. State the Hypothesis and do the necessary calculations to accept or reject the corresponding null hypothesis. (8 marks)
3. Give your inference. (6 marks)

Dataset to be used for Problem 2: Cold_Storage_Mar2018_.csv

Thanks

Program Office