Hypothesis Testing

Z Test

1. Company has established norms for the competency of Executives in an aptitude test. The historic population data suggests that average 73.2 with a standard deviation of 8.6. If 45 randomly selected persons and have an average 76.7, test the null hypothesis μ= 73.2 against the alternative hypothesis μ> 73.2 at the 0.01 level of significance

2. Tests performed with a random sample of 40 diesel engines produced by a large manufacturer show that they have a mean thermal efficiency of 31.4% with a standard deviation of 1.6% . At the 0.01 level of significance , test the null hypothesis μ = 32.3% against the alternative hypothesis μ <> 32.3%

1t

3. The cycle time data of a process has been collected for 10 samples. The target cycle time is 180 sec. (File: Hypothesis Testing_Practicedata.xls; Data Set 1)
   - Have we hit the target?
   - If the results are that we cannot prove a difference, what is the power of the test to detect 1sec difference?

2t

4. You are helping of your teams to improve their performance (Productivity %). You are comparing the data of these teams with few samples. Is there a difference between the team's performance. (File: Hypothesis Testing_Practicedata.xls; Data Set 2)

Paired t

5. The weight of components from two different mold cavities are compared. Data is available to validate if there is any weight difference between cavities. (File: Hypothesis Testing_Practicedata.xls; Data Set 3)

ANOVA & GLM

ANOVA (B)

6. The data of response time for updating several files on different servers have been collected. As servers are of different configurations and the file sizes vary, you wish to know if their or both of them have an impact on response time. (File: Hypothesis Testing_Practicedata.xls; Data Set 4)
7. The procurement team wants to use data to finalize their strategy to achieve the budget for the year. Procurement Managers have worked out 4 different approaches for few parts and estimated the potential saving per part. They haven't taken all parts as it is not practical for initial stage. Is there a distinct strategy evolving from this data? (File: Hypothesis Testing_Practicedata.xls; Data Set 5)
8. Data of whether a team meets its daily production target or not is collected for 90 days along with few factors which are considered to have an association. Using chi-square tests, identify these factors. (File: Hypothesis Testing_Practicedata.xls; Data Set 6)