**Instructions – PLEASE READ THEM CAREFULLY**

* The Assignment must be submitted on Blackboard (**WORD format only**) via allocated folder.
* Assignments submitted through email will not be accepted.
* Students are advised to make their work clear and well presented, marks may be reduced for poor presentation. This includes filling your information on the cover page.
* Students must mention question number clearly in their answer.
* Late submission will NOT be accepted.
* Avoid plagiarism, the work should be in your own words, copying from students or other resources without proper referencing will result in ZERO marks. No exceptions.
* All answered must be typed using**Times New Roman (size 12, double-spaced)** font. No pictures containing text will be accepted and will be considered plagiarism).
* Submissions without this cover page will NOT be accepted.

**Learning Outcome:**

* Understand the concept of process selection, forecasting, capacity planning, production forecast methods and schedule operations.
* Apply knowledge and skills to optimize production objective of maximizing profits using qualitative and quantitative techniques in related areas of operations management.
* Exhibit the knowledge of lean system, quality controls and green systems

**Assignment Question(s):** **(Marks 5)**

**Question 1:**

A company that makes car accessories. The company control its production process by periodically taking a sample of 99 units from the production line. Each product is inspected for defective features. Control limits are developed using three standard deviations from the mean as the limit. During the last 12 samples taken, the proportion of defective items per sample was recorded as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0.01 | 0.03 | 0.0 | 0.04 | 0.01 | 0.01 |
| 0.00 | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 |

a. Determine the mean proportion defective, the UCL, and the LCL?(Marks 1) (word count maximum:150)

b. Draw a control chart and plot each of the sample measurements on it?(Marks 1) (word count maximum:100)

c. Does it appear that the process for making tees is in statistical control?(Marks 0.5) (word count maximum:100)

**Question 2:**

A Chemical Company estimates the annualdemand for a certain product as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Week  | 1 | 2 | 3 | 4 | 5 | 6 |
| Demand  | 649 | 524 | 561 | 738 | 511 | 600 |

1. Forecast the demand for week 7 using a five-period moving average?(Marks 0.5) (word count maximum:100)
2. Forecast the demand for week 7 using a three-period weighted movingaverage. Usethe following weights: W1 = .5, W2 = .3, W3 = .2.?(Marks 0.5) (word count maximum:100)
3. Forecast the demand for week 7 using exponential smoothing. Use an αvalue of .1and assume the forecast for week 6 was 602 units?(Marks 1) (word count maximum:100)
4. What assumptions are made in each of the above forecasts?(Marks 0.5) (word count maximum:150)

**Answer:**