MGMT 651 – Analytics for Managerial Decision-Making

Homework 6

Worth 100 points

**DO NOT FORGET TO TYPE YOUR NAME ON THE FIRST PAGE OF YOUR HOMEWORK SUBMISSION DOCUMENT**

1. (15 points) Chapter 9 Problem 8
2. (10 points) Chapter 9 Problem 12 parts (a) and (b) only. Note that the “Immediate Predecessor” information can be found from Problem 11.
3. (10 points) Chapter 9 Problem 18. Exclude part (d).
4. (25 points) Chapter 9 Problem 20
5. (10 points) Chapter 15 Problem 7. Use POM-QM for part (c). Note that MSE value (required for part (b)) is an output of POM-QM software.
6. (5 points) Chapter 15 Problem 8 part (a) only.
7. (10 points) Chapter 15 Problem 9. Use POM-QM, which provides measures of forecasting accuracy.
8. (15 points) Freight car loadings over a 18-week period at a busy port are as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Week*** | ***Number*** | ***Week*** | ***Number*** | ***Week*** | ***Number*** |
| **1** | 220 | **7** | 350 | **13** | 460 |
| **2** | 245 | **8** | 360 | **14** | 475 |
| **3** | 280 | **9** | 400 | **15** | 500 |
| **4** | 275 | **10** | 380 | **16** | 510 |
| **5** | 300 | **11** | 420 | **17** | 525 |
| **6** | 310 | **12** | 450 | **18** | 541 |

* 1. Determine a linear trend line for the freight car loadings.
  2. Use the trend equation to forecast freight car loadings for weeks 20 and 21.
  3. The manager intends to install new equipment when the volume exceeds 800 loadings per week. Assuming the current trend continues, the loading volume will reach that level in approximately which week?