

OMGT3223 Exam3

Please state all assumptions, formulae, & definitions. Also, show all your work & explain your answers. Calculations are important but so are explanations & dialogue.

1. You are required to submit this exam by the due date via Canvas. **MAKE SURE TO USE THE NAMING CONVENTION SET DOWN IN THE SYLLABUS WHEN SUBMITTING YOUR EXAM/FILES IN CANVAS.** Late papers will not be accepted.
2. Your work should consist of:
 - a. A cover sheet with your name & the date.
 - b. A **1-PAGE**, one-side only, Executive Summary of your work including explanations, calculations, diagrams, etc. Please feel free to include as much detail as you think necessary but remember you have limited space.
 - c. Executive summaries are expected to be typewritten (i.e., MS-Word, WordPerfect). However, calculations can be handwritten. Clarity & neatness are expected.
 - d. Please refer to the **website for further information regarding writing executive summaries.** You may use any font & spacing that is reasonable. i.e., 0.25-inch margins & font size 10 are at the low end of reasonable. Remember you are presenting this to your boss.
 - e. Please attach all calculations, spreadsheets, diagrams, graphs, etc., to the back of the executive summary & label the section Appendix A. If you are running short on space in your executive summary, you may reference pages in the Appendix. (This may come in handy for certain diagrams, graphs, etc.) It is vitally important that you link your work to the executive summary, i.e., **I will NOT go searching for answers, spell them out in your executive summary & show your work in the Appendix!!**
3. You will be graded on both your calculations & your presentation. Calculations will be weighted approximately 75% & your presentation (i.e., the executive summary) will be weighted 25%. Just a reminder, if I can't read it or find it, I can't grade it.

A typical exam will have the following parts:

- a cover page with your name & date,
- your executive summary,
- an appendix cover page, &
- your appendix pages.

You may turn in both a Word file & an Excel file (the Excel file would most likely contain your Appendix material). IT IS HIGHLY RECOMMENDED THAT YOU TURN IN ALL YOUR FILES, WORD & EXCEL.

NOTE: I WANT ONLY 1 (ONE) EXECUTIVE SUMMARY THAT INCLUDES ALL EXAM PROBLEMS. DO NOT CREATE MORE THAN 1 (ONE) EXECUTIVE SUMMARY!! PLEASE EMAIL ME IF THIS IS NOT CLEAR.

OMGT3223 Exam3

Please state all assumptions, formulae, & definitions. Also, show all your work & explain your answers. Calculations are important but so are explanations & dialogue.

Tantalizing Time Series Tantrums

Joe has been given the following data. His boss has explained to him that for years he has been using the prior year's Sales figures to forecast the next year's sales figures. In addition, he thinks he has been doing a good job. However, Joe remembers from Business School, that there are a number of other techniques that could be used to forecast Sales. In fact, he thinks his boss' method is really crude. He believes he can find another forecasting method that improves upon his boss' "naïve" method.

Joe has chosen to test his boss' method against a 3-year & 5-year moving average. From the following data set in Table 1.1 compute the "naïve", 3 year, & 5 year moving averages.

1. Create a forecast for 2026 & compare the forecasts using a measure of error (e.g., MAD).
2. Create dialogue that Joe can use to convince his boss that the current "naïve" method is not the best method,
3. Give a suggestion on a better method, & comment on which method yields the least accurate forecast & why.

Table 1.1

| Year | Sales (\$000) |
|-------------|----------------------|
| 2010 | 181.42 |
| 2011 | 420.33 |
| 2012 | 496.30 |
| 2013 | 182.77 |
| 2014 | 288.75 |
| 2015 | 489.12 |
| 2016 | 496.79 |
| 2017 | 585.97 |
| 2018 | 632.17 |
| 2019 | 697.22 |
| 2020 | 322.20 |
| 2021 | 485.37 |
| 2022 | 524.45 |
| 2023 | 320.16 |
| 2024 | 321.60 |
| 2025 | 424.14 |
| 2026 | ??? |

OMGT3223 Exam3

Please state all assumptions, formulae, & definitions. Also, show all your work & explain your answers. Calculations are important but so are explanations & dialogue.

Raucous Regression Rantings

Joe has also collected the following data in Table 1.2. Joe remembered from Business School, that there is a technique called “regression” that could be used to forecast Sales. In fact, he thinks the “regression” technique most likely will lead to the best forecast of all the techniques he has applied.

1. Help Joe create a multiple regression model to predict Sales using Ads & # in the Sales Force.
2. Explain why the multiple regression model is or isn't a better forecasting model than the forecasting techniques used in the previous problem (HINT: include a discussion of the regression statistics).
3. Forecast Sales if Ads = 87 & # in the Sales Force = 137 & show your linear regression model as well as its use. Create dialogue to explain this result.

(HINT: At a minimum you need to compare all the previous forecasts (e.g., Naïve & Moving Average forecasts to the multiple regression model via an error measurement such as MAD).

Table 1.2

| Year | Sales (\$000) | Ads (\$000) | # in the Sales Force |
|-------------|----------------------|--------------------|-----------------------------|
| 2010 | 181.42 | 41 | 101 |
| 2011 | 420.33 | 73 | 176 |
| 2012 | 496.30 | 54 | 175 |
| 2013 | 182.77 | 67 | 132 |
| 2014 | 288.75 | 53 | 142 |
| 2015 | 489.12 | 78 | 186 |
| 2016 | 496.79 | 80 | 184 |
| 2017 | 585.97 | 72 | 195 |
| 2018 | 632.17 | 86 | 200 |
| 2019 | 697.22 | 82 | 177 |
| 2020 | 322.20 | 76 | 149 |
| 2021 | 485.37 | 55 | 189 |
| 2022 | 524.45 | 79 | 190 |
| 2023 | 320.16 | 81 | 151 |
| 2024 | 321.60 | 79 | 168 |
| 2025 | 424.14 | 72 | 167 |
| 2026 | ??? | | |