

Exam 1 – OMGT3223

Please state all assumptions, formulae, and definitions. Also, show all your work and explain your answers.

Read all instructions carefully and answer each question asked. Calculations are important but so are explanations and 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.** Late papers will not be accepted.
2. Your work should consist of:
 - a. A cover sheet with your name and 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 and neatness are expected.
 - d. Please refer to the **website for further information regarding writing executive summaries.** You may use any font and spacing that is reasonable. i.e., 0.25-inch margins and font size 10 are at the low end of reasonable. Remember you are presenting this to your boss.
 - e. Please upload/attach all calculations, spreadsheets, diagrams, graphs, etc., to Canvas or include in a section after your executive summary and label that 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 and show your work in the Appendix!!**
3. You will be graded on both your calculations and your presentation. Calculations will be weighted approximately 75% and 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 and date,
- your executive summary,
- an appendix cover page, and
- your appendix pages.

You may turn in both a Word file and an Excel file (Excel file most likely contains Appendix material).

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.

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Jane's has been presented with the following questions. She has been asked to provide an analysis and explanation. Help Jane solve the following questions:

1. The marketing staff figures that many of the company's customers are part of tour groups. The marketing folks give Jane the following information and ask her to analyze it.

Fifty percent of all visitors to Potomac Mills Mall in NOVA are part of tour groups. Given that a visitor is from a tour group, the probability that they are male is 1%. However, given that a visitor is not with a tour group the probability of the visitor being a male is 70%. The marketing staff wants to know:

- a. Create a joint probability table.
 - b. What is the probability of being a female and part of a tour group?
 - c. What is the probability of being a male and part of a tour group?
 - d. What is the probability of being part of a tour group given that you are male?
2. Jane's accounting department hires CPA's from three states. The head of accounting gives Jane the following information.

Three states are beginning to require that future CPA's have 150 hours of college credit, VA, NC, and HI. 10% of the future CPA's will come from HI, 30% from VA, and 60% from NC. Given that a future CPA is from VA there is a 38% probability that they will have met the 150 hrs of college credit requirement. Whereas, given a future CPA is from NC there is an 85% probability that they will have met the 150-hr college credit requirement. In the same vein, given a future CPA is from HI there is a 42% probability that they will have met the 150-hr college credit requirement. The accounting department wants to know:

- a. Create a joint probability table.
- b. What is the probability of a future CPA not having the 150-hr college credit requirement?
- c. Given that a student does not meet the 150-hr college credit requirement, what is the probability that they are from NC?
- d. Show that the state a future CPA is from and the ability to meet the 150-hr college credit requirement are dependent events (i.e., show $p(a|b) \neq p(a)$).

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3. Steven, Jane's husband and CFO of the company, is thinking about two investments. One is a grocery store, which can make \$12,000 in good economic conditions or \$6,000 in bad economic conditions. Another is a clothes store, which can make \$15,000 in good economic conditions or \$1,000 in bad economic conditions. The decision depends on the economic conditions.
- a. Develop a payoff table for the above situation.
 - b. Find the following:
 1. Maximax
 2. Maximin
 3. Equal Likelihood
 4. Minimax Regret
 - c. If the probability of future events follows the distribution in Table 3.1, find the expected value of each of the real estate choices. Based on expected value which would you choose and why? HINT: You need to discuss dominance, tradeoffs, and risk here.

Table 3.1

Future State of Market	p(Future State of Economy)
Good Economic Conditions	0.625
Bad Economic Conditions	0.375

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4. Alan Fang, the company's new projects development consultant has a new proposal for the company. The company can invest in one of three different real estate projects: Slaney Loop, Haiku Road II, or Meath Place IV. He knows three things can happen after they invest: the market could boom, the market could hold steady, or the market could tank. He also knows the \$ returns from Slaney Loop could be \$1129k in a boom, \$487k in a steady market, and -\$919k if the market tanks. On the other hand, Haiku Road II offers \$799k in a boom, \$303k during steady conditions, and \$209k if the market tanks. Finally, Meath Place IV offers \$-200k in a boom, \$0k if things are steady, and \$3563k if things tank. Help Jane answer the following for Alan:
- Create a payoff table for the real estate decision problem.
 - What choice would Alan make using the
 - 1) Maximax criterion?
 - 2) Maximin criterion?
 - 3) Minimax Regret criterion?
 - 4) Equal likelihood criterion?
 - If the probability of future events follows the distribution in Table 4.1, find the expected value of each of the real estate choices. Based on expected value which would you choose and why? HINT: You need to discuss dominance, tradeoffs, and risk here.

Table 4.1

Future State of Market	p(Future State of Market)
Boom	0.72
Steady	0.06
Tank	0.22

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5. Jane has been given the following simulation output graph by the statistics department. She needs to decide which alternative to recommend and why? The folks down at the stats department did provide the following standard deviation values for the three alternative investments: $SD_{AAA} = 152$, $SD_{AA} = 100$, $SD_{Junk} = 167$. Help Jane make a decision and remember to discuss the three areas of sensitivity analysis.

Sensitivity Graph

