**BA 352: Take Home Exam 3**

As you might recall, this class was divided into three parts – project modeling, MS Project, and preparing to take the CAPM exam. This exam reviews all three parts, sort of…

**1) (5 points, CAPM)** Take Practice Exam 3 on <https://www.pmppracticeexam.org/about/>. One-hour time limit and you may cheat on, let’s say, 15 out of the 50 questions – you can use Google or the PMBoK on 30%, must do the other 70% on your own, *honor system* in place. **a)** Let me know your score out of 50 – I won’t grade you on this, rather I just want to get a feel for where the class is at. **b)** Below, write up a detailed, convincing plan of what you would do if you really wanted to pass the CAPM; I will grade you on this part. (You are not required to use the whole page, but one sentence probably is not enough, either.)

**2) (5 points, MS Project)** I have no idea how to do this off campus since you don’t have MS Project at home, so have 5 points on the house!

**3) (5 points, EVM)** You are 8 months into a two-year, $18 million project. So far you have spent $9 million (AC) and have completed $7 million worth of work (EV). Use the EVM metrics you learned on OCA 10 to tell me how the project is looking at this stage. Where should we be at this point? Are we on schedule and on budget? Is crashing a good idea here? Assuming things continue at current rates, how much will the project cost and how many months will it take to complete?

**4) (Project Modeling Review)** Here you will review **a)** CPM, **b)** Crashing and **c)** PERT. Feeling adventurous? Combine all three for extra credit in part **d)**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity** | **I.P.** | **Time** | **Slack** |
| A | --- | 6 |  |
| B | --- | 8 |  |
| C | A | 18 |  |
| D | A,B | 5 |  |
| E | B | 7 |  |
| F | D,E | 9 |  |
| G | E | 10 |  |
| H | F | 3 |  |

**a)** **(5 points)** Determine the critical path, completion times and slack times for this project.

**b) (5 points)** Determine the full menu of costs to crash the same project from the completion time you got in part **a)** incrementally down to the minimum possible time. Solve by hand or use MS Excel Solver.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity** | **I.P.** | **Time** | **Crash** | **Cost** |
| A | --- | 6 | 4 | $500 |
| B | --- | 8 | 5 | $600 |
| C | A | 18 | 10 | $100 |
| D | A,B | 5 | 4 | $250 |
| E | B | 7 | 4 | $300 |
| F | D,E | 9 | 6 | $450 |
| G | E | 10 | 7 | $150 |
| H | F | 3 | 2 | $400 |

**c) (5 points)** Use PERT to develop a distribution of times for how long this project will take. Assume the optimistic times are 60% of the most likely times and the pessimistic times are 180% of the most likely times.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity** | **I.P.** | **opt** | **ml** | **pess** | **mean** | **SD** |
| A | --- | 3.6 | 6 | 10.8 | 6.4 | 1.2 |
| B | --- |  | 8 |  |  |  |
| C | A |  | 18 |  |  |  |
| D | A,B |  | 5 |  |  |  |
| E | B |  | 7 |  |  |  |
| F | D,E |  | 9 |  |  |  |
| G | E |  | 10 |  |  |  |
| H | F |  | 3 |  |  |  |

**i)** According to the PERT model, what are the mean and standard deviation of the whole project? **ii)** Estimate the probability that the project will be completed in 24 days or less. **iii)** Estimate the probability that the project will take 30 days or more. **iv)** With 95% certainty, when will the project be completed?

**d) (Extra Credit, up to 5 points)** The project will be late and there will be severe penalties if the project takes 30 days or more. According to your results in **ciii)** above, this probability is currently about 1/3, way too likely to be comfortable. **Which activities should you crash to bring this probability down to 10% (or less) at minimum cost?** In other words, figure out the best (aka “cheapest”) way to crash the project so that the PERT model now estimates the probability of being 30 days or more at 10%. Assume that if you decrease an activity by a day, the optimistic and pessimistic times also change following the 60% and 180% guidelines and the mean and sd will change too. For your best answer, recalculate parts **i) – iv)** from part **c)** above. Good luck, I don’t really know how to do this one but am curious to see what you come up with…