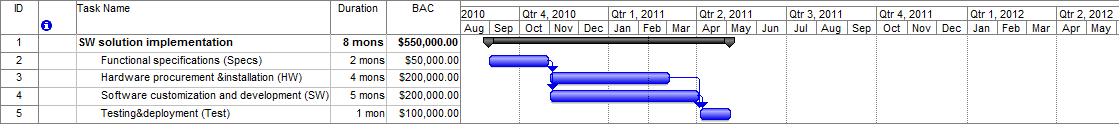
FINAL EXAMINATION – February 2011

## name:

Scope of work: four exercises + one small project

# Monitoring (4 points)

Following is the original bar schedule of a project to implement a software solution. (Specs is predecessor to HW & SW, which are in turn predecessors to Test).



Below is also provided a status report just recorded on January 31, 2011.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **BAC** | **BCWS** | **ACWP** | **BCWP** |
| Functional specifications (Specs) | 50,000 | 50,000 | 52,000 | 50,000 |
| Hardware procurement &installation (HW) | 200,000 | 150,000 | 112,000 | 112,000 |
| Software customization and development (SW) | 200,000 | 120,000 | 127,500 | 150,000 |
| Testing&deployment (Test) | 100,000 | - | - | - |

Assume you are the project manager of the contracting consultant challenged with estimating the worst-case completion date and cost of the project. What would you propose?

# Payment scheme (4 points)

Take Exercise 1. Assume the contract provides for the project to be compensated based on cost plus a 100,000 euro fixed fee payment scheme. Also, either savings or cost overrun between the original budget and the actual cost must be shared equally.

Today you receive an e-mail from your boss that wants to know the expected estimated project revenue that will be generated at completion. What would you reply to your boss?

# Scheduling (4 points)

The following project activities with associated costs are given (T in days, C in $1,000). If the overhead cost is 1,500$/day, what is the optimal project duration?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity | predecessor | T normal | T crashed | C normal | C crashed |
| A |  | 6 | 3 | 6 | 9 |
| B | A | 9 | 5 | 9 | 12 |
| C |  | 3 | 2 | 4.5 | 7 |
| D | C | 5 | 2 | 10 | 16 |
| E | D | 2 | 2 | 2 | 2 |
| F | C | 4 | 1 | 6 | 10 |
| G | F | 8 | 5 | 8 | 10 |

# Decision making (3 points)

The ABC Inc. is requested by an utility company to submit a proposal for a power station contract. In the past, the cost of preparing bids has been about 5% of the cost of the job. The ABC proposal manager is considering three possible bids with cost mark up 10%, 20%, and 30%. Of course, increasing the mark up increases the project price, decreasing the probability of winning the contract, as follows:

|  |  |  |
| --- | --- | --- |
| Bid price | Probability to win | Probability to lose |
| +10% | 70% | 30% |
| +20% | 40% | 60% |
| +30% | 10% | 90% |

Prepare a decision tree. If ABC Inc. uses the maximum expected profit as the criterion, which bid proposal would she select?

## Project (8 points)

Pretend to be the SPV’s project manager of the BOT Oil Pipeline project to bring extracted oil from Chad to Cameroon’s marine terminal on the pacific ocean. The owners of the project are the Chad and Cameroon’s governments. Chad is an African country that has been plagued by political violence, various states of civil war and recurrent attempted coups d'état since its gaining of independence in 1960. The country is one of the poorest and most corrupt countries in the world; most Chadians live in poverty as subsistence herders and farmers. Since 2003 crude oil has become the country's primary source of export earnings, superseding the traditional cotton industry. On the contrary, Cameroon enjoys relatively high political and social stability.

The Chad-Cameroon Oil Pipeline project is depicted in the charts below.

|  |  |  |
| --- | --- | --- |
|  | DISTANCES  Oil fields – Pumping station 1 (PS1)  PS 1 – PS 2  PS 2 – PS 3  PS 3 – Yaounde city station  Yaounde – Marine terminal at Kribi | km  20  180  200  600  300 |

You are asked to schedule the project with the line-of-balance method, determine the expected total duration, plot the s-curve line of expected expenditures, plot the resource usage diagram, and develop a risk plan with identification and assessment of the major risks and associated preventive actions.

Below are the durations of each individual task, when performed by one construction contractor. Four is the maximum number of available construction contracting companies. All tasks can be performed by 1 or more teams without loss of productivity (i.e.: 1 team takes 2 months; 2 teams take 1 month).

|  |  |
| --- | --- |
| **Task** | **Duration** |
| Oil wells | 12 months |
| Pipeline Section from Oil fields to PS1 | 10 km/month |
| Pipeline section PS1 – PS2 | 20 km/month |
| Pipeline section PS2 – PS3 | 25km/month |
| Pipeline section PS3 – Yaounde | 30 km/month |
| Pipeline section Yaounde – Marine terminal | 20 km/month |
| PS1 construction | 4 months |
| PS2 construction | 5 months |
| PS3 construction | 6 months |
| Yaounde city station | 8 months |