FINAL EXAMINATION – 2018-02-08

## name:

# Scheduling (6 points)

A project to develop a software application is given in the following matrix. The estimated cost totals $50,000.

|  |  |  |
| --- | --- | --- |
| task | Immediate predecessor | duration |
| Requirements definition | - | 2 |
| Software development | Requirements definition | 3 |
| Hardware procurement | Requirements definition | 1 |
| Infrastructure deployment | Hardware procurement | 1 |
| User acceptance test | Software development; Infrastructure deployment | 1 |

Experience with similar projects suggests a 30% likelihood that the project will encounter client relationship risk during the software development stage that could delay it as much as 3 months and increase the estimated cost by $30,000. A possible risk mitigation action is to increase the project staff by 20 percent for an additional estimated cost of $10,000. If this action is taken the likelihood of client relationship risk would be reduced to 10%, and the delay and cost would be 1 month and $8,000, respectively.

Provide a recommendation whether to mitigate risk and propose suitable duration and budgeted cost.

# Monitoring (6 points)

Take the following project developed as a contractor:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Task** | **Duration  (month)** | **Monthly budget cost (k€/month)** | **WP**  **Month 1** | **WP**  **Month 2** | **WP**  **Month 3** | **WP**  **Month 4** | **WP**  **Month 5**  **(time now)** |
| A | 2 | 15 | 60% | 90% | 100% | 100% | 100% |
| B | 1 | 20 | To be started | To be started | 10% | 100% | 100% |
| C | 4 | 20 | To be started | To be started | 20% | 35% | 50% |
| D | 3 | 30 | To be started | To be started | To be started | 10% | 20% |
| E | 2 | 10 | To be started | To be started | To be started | To be started | To be started |

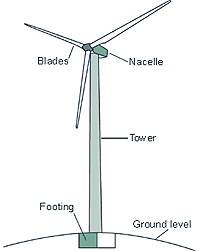
The actual value at the end of the fifth month is 110k€.

If the contract is compensated based on a cost plus 120k€ fixed fee and overhead cost is 15k€/month, suggest possible corrective actions to be taken, if any.

## Small Project (6 points)

You have just been appointed Project Manager of a sole construction contract to erect a wind farm composed of 2 wind turbines.

A sample scheme of a wind turbine is given in the figure below.



The scope of work of one single turbine is composed of the following tasks and associated durations and cost, when performed by one team of workers:

|  |  |  |
| --- | --- | --- |
| TASK NAME | DURATION (weeks) | BUDGET (k€) |
| Footing construction | 4 | 100 |
| Fabrication and transportation of components | 12 | 50 |
| Erection of tower | 1 | 20 |
| Lifting and fitting of the nacelle onto tower | 1 | 20 |
| Blades assembly | 1 | 20 |
| Lift and attachment of blades to the nacelle | 1 | 20 |
| Test of a wind turbine | 4 | 120 |

You are asked to prepare a draft project charter, which should include: create the WBS and CBS, define the network schedule, calculate the total duration by identifying the critical path, plot the usage profile for the resource “team of workers”, analyse two major risks.

You have no more than 3 teams available. All tasks can be performed by 1 or more teams (if you make use of more than 1 team to perform a single task, please consider no loss of productivity. For example: 1 team takes 2 months; 2 teams take 1 month).