FINAL EXAMINATION – 2018-07-03

## name:

# Scheduling (6 points)

There is a project with the following data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Activity | Immediate predecessor | Duration  (weeks) | Crash time  (weeks) | Cost-slope (€/week) |
| *a* | - | 4 | 2 | 100 |
| *b* | a | 3 | 2 | 250 |
| *c* | b | 3 | 1 | 110 |
| *d* | c | 5 | 3 | 200 |
| *e* | a | 2 | 1 | 160 |
| *f* | d, e | 3 | 2 | 500 |

The weekly indirect cost is €400.

Illustrate the crashing process step by step and calculate the optimal project duration.

# Small Project (6 points)

Pretend to be the proposal manager of a project to design and build an automated warehouse facility composed of three separate buildings:

Building 1 2,000 m2

Building 2 4,000 m2

Building 3 8,000 m2

From a database of similar projects, standard cost and duration to perform 2,000 m2 are as follows:

TASK Cost [k€/2,000m2] Duration [months/2,000m2 per team]

Design and procurement 30 1 month

Excavations and foundations 50 1 month

Civil works 100 3 months

Electrical equipment 60 1.5 months

HVAC equipment 50 2 months

Commissioning 10 0.5 month

3 teams are the maximum available units. Each activity can be performed by more than one team without affecting productivity.

You are asked to plan the project, prepare the proposal budget and schedule, propose a deadline and project firm fixed price to the owner (using return on cost equal to 25%).

# Monitoring (6 points)

Following is the progress report of a sample project that is still underway after 6 months.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| task | predecessor | Duration | Budget (BAC) | ACWP | WP |
| 1 | 2 | 4 months | 1,000 | 1,000 | 80 |
| 2 |  | 5 | 2,000 | 2,400 | 100 |
| 3 |  | 2 | 5,000 | 4,000 | 100 |
| 4 | 2 | 3 | 2,000 | 1,200 | 30 |
| 5 | 3,1 | 4 | 5,000 | 500 | 10 |

Calculate the longest duration estimate at completion and the associated cost at completion.