

DMPS - Part B - Simulation June, 3rd 2021

This is Part "B" of the DMPS exam.

It is composed of 2 exercises. It weighs 1/3 of the total exam.

You will have 40 minutes to make it. Time is purposefully short, so please start immediately!

Pay attention to the different types of questions: if you will answer in the wrong way, you will have a penalty!

In case, it's better to select "I don't know" answer (with no penalty).

* Obbligatoria

* Questo modulo registrerà il tuo nome, inserire il nome.

Please Identify Yourself

1

Please insert your Surname *

2

Please insert your Name *

Please Insert your Personal Code (10xxxx) *



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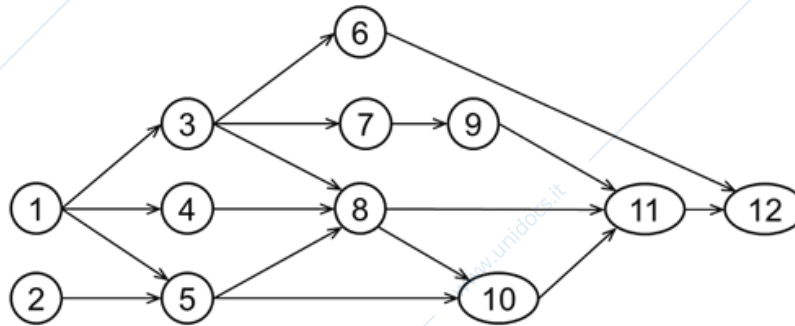
Exercise 1 - Assembly Line

Consider the assembly graph reported in Figure and the time required by each operation reported in Table.

Considering a Cycle Time of 10 minutes (no changes allowed) and a maximum saturation rate allowed of 90%, design the assembly line. For the design, please apply the following methods:

- Method 1: Criterion: Max N followers; Sub-criterion: MaxDur; Approach: task oriented
 - Method 2: Criterion: MaxDur; Sub-criterion: Max N followers; Approach: station oriented
- And evaluate their efficiency.

In case a second sub-criterion is needed, apply the Alphabetic one.



Operations	1	2	3	4	5	6	7	8	9	10	11	12
Time [min]	3	6	5	4	2	7	3	7	1	2	2	1

4

Method 1 - Number of Station Obtained *
(2 punti)

- 5
 6
 7
 I don't know
 4

5

Method 1 - Operations in Station A, in order (First station) *
(2 punti)

- 3 and 1
- 1 and 3
- 3, 1 and 9
- 1, 3 and 12
- I don't know

6

Method 1 - Operations in Station B, in order (Second station) *
(2 punti)

- 6
- 8
- 5 and 6
- 8 and 5
- I don't know

7

Method 1 - Efficiency *
(2 punti)

- 80%
- 83.3%
- 96%
- 100%
- I don't know

8

Method 2 - Number of Station Obtained *
(2 punti)

- 5
- 6
- 7
- I don't know
- 4

9

Method 2 - Operations in Station A, in order (First station)
(2 punti)

- 6 and 5
- 8 and 5
- 1 and 2
- 2 and 1
- I don't know

10

Method 2 - Operations in Station B, in order (Second station)
(2 punti)

- 3 and 4
- 6
- 8 and 10
- I don't know
- 10 and 6

11

Method 2 - Efficiency *
(2 punti)

- 80%
- 83.3%
- 96%
- 100%
- I don't know

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Exercise 2

Product Ruffle can be purchased either by two suppliers (A and B). Supplier A proposes a contract to supply following a fixed quantity, ensuring deliveries in 6 days, with a standard deviation of 3 days; while supplier B proposes a contract to supply following a fixed-time period model of 12 days, a delivery time of 5 days, with a standard deviation of 0,5 day. In both cases the supply agreement provides that the purchasing cost of each UL is 1.200 €/UL and that the cost of order issuing is due to the average time devoted by the unsaturated administration staff estimated in 500 €/order and an expense of 270 €/order for issuing and sending delivery notes. There are 21 working days per month for 11 months a year. The stock holding expenses rate is estimated at 11%. The bank can issue for the company a loan having a burden of 7%/year, nevertheless the company has recently invested its cash in bonds having an average yield of 4%/year. The demand for product Ruffle is estimated as a normal distribution of average 30 Unit Load/month and coefficient of variation of 0,1. Currently, safety stocks are needed ensuring the non-occurrence of stock-out with a probability of 97.5%.

You are requested to make an overall assessment of the two alternatives available for the supply.

12

Supplier 1 - EOQ (Rounded) [UL] *
(2 punti)

- 32
- 54
- 29
- 49
- I don't know

13

Supplier 1 - Average Inventory Level [UL] *
(2 punti)

- 33.5
- 23.5
- 36
- 25
- I don't know

14

Supplier 1 - Total Cost of Order Issuing [€/y] *
(2 punti)

- Around 2.800 €/y
- Around 4.700 €/y
- Around 3.100 €/y
- Around 5.200 €/y
- I don't know

15

Supplier 2 - Safety Stocks [UL] (Rounded) *
(2 punti)

- 6
- 3
- 4
- 5
- I don't know

16

Supplier 2 - Stock Holding Cost [€/y] *
(2 punti)

- Around 2.700 €/y
- Around 3.200 €/y
- Around 2.800 €/y
- Around 2.400 €/y
- I don't know

17

Best Supplier *
(1 punto)

- A
- B
- I don't know

Confirmation of previous answer/s

Please select "yes" to confirm that you completed every question before. You will not be able to come back.

18

Do you confirm you want to submit this part of the exam? *

- Yes
- No, I want to withdraw

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