

Student number	Name (first and last)	Room
Notes: (i) The exam is to be done without consultation; (ii) Answer the questions in the exam with a pen and return it stapled; (iii) Sheets not belonging to the exam are not accepted		

2nd Exam	Date: 2018-01-29	Hour: 18:30 – 19:30
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I – Planning is one of the process groups of project management defined in the ISO 21500 and in the PMBOK. Time planning in particular interacts with the planning of other aspects of construction projects

- a) Identify four other aspects of a project in which the planning process depends of the time planning or that the time planning is dependent on, explaining or indicating the result that represents the interaction. (2.0 points)

Aspect	Explanation / Result

- b) Name three types of graphical representation that can be used for scheduling construction projects. (1,5 points)

2 – The development of the work breakdown structure (WBS) is the first step to develop the schedule of a construction project.

a) Name two technics to define the activities in a WBS. (2,0 points)

b)

c) Refer four of the attributes that may characterize the activities of the WBS. (2,0 points)

3 – Assume the role of a scheduler and take into consideration the information in the following table.

Task	Duration (days)	Relationships	Type of relationship	Lag (days)	Early start (ES)	Early finish (EF)	Late start (LS)	Late finish (LF)	Single restricted float (SRF)	Total float (TF)
A	10	-	-	-						
B	7	-	-	-						
C	4	A	FF: Finish-Finish	8						
D	5	B	SS: Start-Start	1						
		B	FF: Finish-Finish	2						
E	11	C	SS: Start-Start	-						
		D	FS: Finish-Start	-						
F	9	B	FS: Finish-Start	-						
G	8	C	FS: Finish-Start	-1						
		F	FS: Finish-Start	-1						

- a) Draw the precedence diagram, calculate the network using the critical path method assuming interruptible tasks, fill the missing field in the table and identify the critical path and the governing and non-governing relationships. (3,0 points)

- b) Identify the critical path and the total duration of the project assuming continuous tasks. (2,0 points)

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4 – Defined the WBS, the construction project schedule may be calculated with the critical path method once the duration and sequence of the activities is established.

- a) Comment, justifying, the statement “The duration of the activities varies linearly with the number and the hours of work per week of the resources”. (2,0 points)

Comment (T/F)	Justification

b) Refer three principles for the definition of the relations amongst the activities. (1,5 points)

5 – Risk management and control contribute to ensure that the construction project goals are met.

- a) Explain how the risk criteria defined influence the way the risk evaluation of construction project is carried out. (2,0 points)

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6 – The estimate of the Earned Value (EV) in the Earned Value Method depends on the attributes of the work. Refer, explaining briefly the logic and the relation with the attributes of the work, three techniques to estimate the Earned Value. (2,0 valores)
