Engineering Project Management – EEL-4-MNEPM – December 2017

All questions are of equal value. All students to answer all questions.

Question 1

The project life-cycle is a representation of a project from its start point until its conclusion. Its form varies considerably from author to author and while most agree on why and when a project starts, not all will consider the same end point.

a)

i. In your view, when does a project commence?
ii. In your view when is a project complete? Would the completion point of a project be the same for all projects?
iii. Provide, from your own experience or reading, a case study example of a situation of when a project commences. Ensure you highlight what the drivers for a project might be, whether they are technical or socio-political in nature. **(10)**

b) Consider the situation of the construction of a health centre on the outskirts of a medium sized city.

When, in your opinion, is this project complete? Ensure you provide full-reasoning in your answer. **(3)**

c) Consider the situation of the development of a crude-oil transfer facility in the Gulf of Mexico, a similar project to that considered as a case study in the lectures.

i. When, in your opinion, would this project be complete?
ii. What considerations would you suggest need to be made at this project's planning stage?
iii. What might the consequences be if these considerations are not made? **(7)**

Question 2

a) Using the worksheet overleaf draw the network diagram for the project shown in Table Q2 below.
[Ensure your network diagram is neat, clear and well presented. Ensure you have detached the worksheet, *completed your exam number*, and enclosed *inside* your answerbook. Please do not use clips or fasteners to attach to your answerbook.] **(5)**

Table Q2

Activity	Precedes	Duration - weeks
Start	A,B,C	0
A	D,G,H,I	8
B	E,F	1
C	G,H,I	10
D	J,K	6
E	H,I	7
F	N,O	1
G	L	6
H	L	10
I	O	2
J	M	3
K	L	1
L	Finish	9
M	Finish	6
N	Finish	6
O	Finish	5

Ensure you have detached the worksheet, completed your exam number, and enclosed inside your answer book.

b) The method you have just used to create the network diagram is known as the *Critical Path Method* and it allows the Critical Activities to be determined.

i. What are the critical activities for the above project?
ii. How can a project manager ensure a critical activity does not affect the overall duration of a project?
iii. List and discuss in detail *four* reasons why an activity which is not critical may become critical during the course of a project. **(8)**

Question 2 Continued

c) Activity D starts on time but by the time the activity is only half complete it has taken 4 weeks.

i. If nothing further is done to rectify the situation what is the likely effect on the overall project?

At this point, 4 weeks after the start of activity D, there is a further delay whilst designs are completed and work stops for 3 weeks.

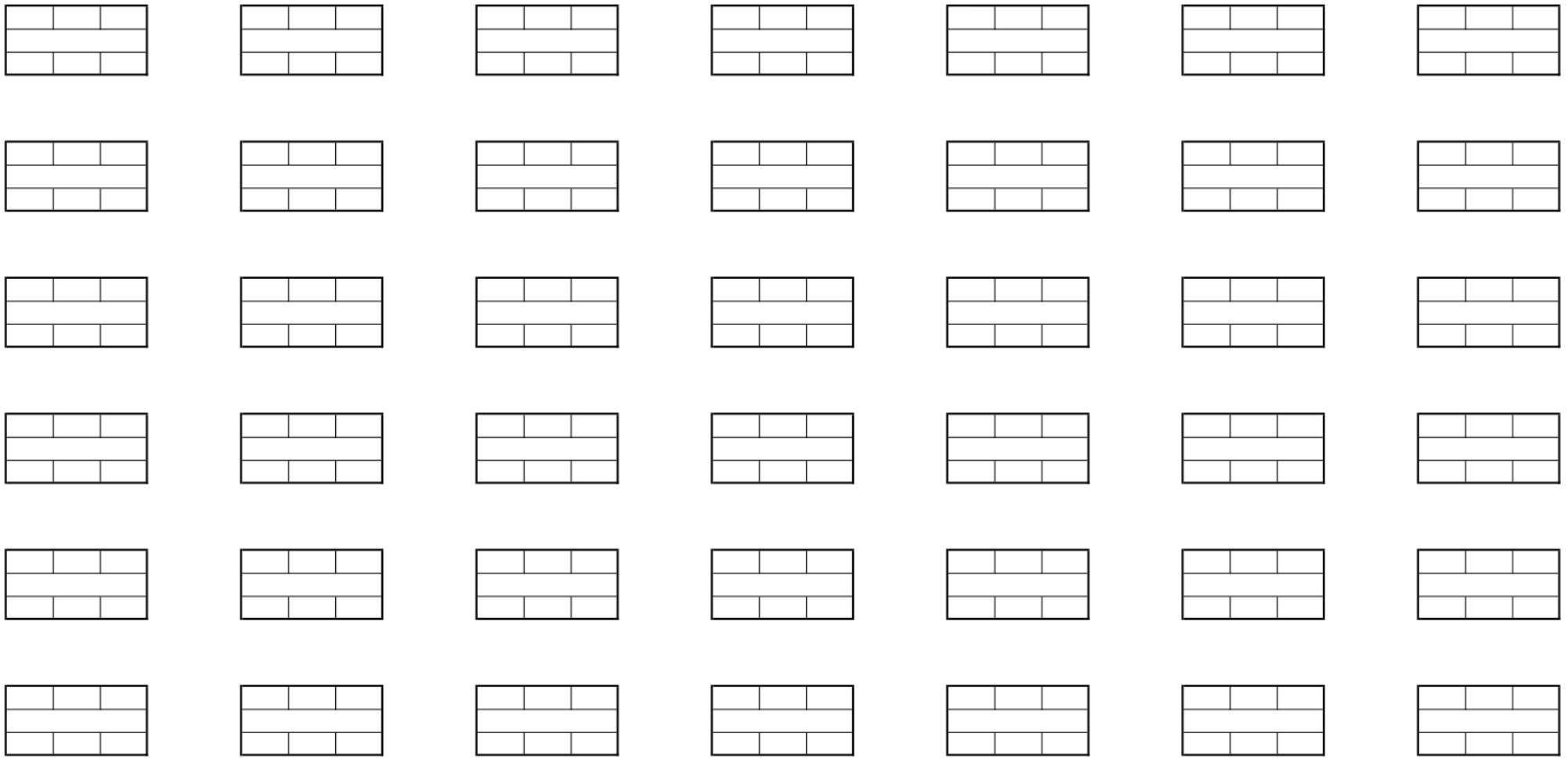
ii. Once work restarts on activity D what can be done to prevent an effect on the overall duration of the project?

iii. What are the consequences of your suggestions? **(7)**

See worksheet for Question 2 on next page

DETACH AND INCLUDE WITH YOUR ANSWER BOOK

Exam Number:_____



Engineering Project Management - December 2017 - Question 2

Question 3

a) During the implementation phase of a project *Monitoring & Control* is an important process.

i. Summarise the fundamental steps involved in monitoring & control.
ii. *Cost* is an obvious example of a project performance parameter. List other performance parameters, indicating why they are important.
iii. Suggest reasons, during the implementation of a project, why performance parameters might be affected. (For example, *cost* could be affected by changes in supplier prices). **(8)**

b) Many projects are considered to be unsuccessful because their *cost* performance is not ideal. One particular example is the Millennium Stadium in Cardiff, Wales, which led to the financial collapse of its contractor.

The contract for this project was based on *price*, with a lump-sum, fixed-price payment method.

i. Discuss why such a type of contract poses difficulties for contractors.
ii. What type of contract based on *price* is better for contractors? Why? **(6)**

c) Other types of contract have payments for contractors based on *cost*.

i. Discuss reasons why such a contract payment method may be used and its implications. Provide an example if you can of where and why a cost-based payment method was used.
ii. What are the detriments of this type of payment method to the contract principal?
iii. How might such a payment method be altered to prevent these detriments? **(6)**

END OF PAPER