

**UNIVERSITY OF BOLTON**

**WESTERN INTERNATIONAL COLLEGE FZE**

**MSc CONSTRUCTION PROJECT MANAGEMENT**

**SEMESTER TWO EXAMINATION 2018/2019**

**PROJECT MANAGEMENT**

**MODULE NO: CPM7002**

Date: Friday 31<sup>st</sup> May 2019

Time: 10.00 am to 1.00pm

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**INSTRUCTIONS TO CANDIDATES:**

There are FIVE questions on this paper.

Answer ANY Four questions.

All questions carry equal marks.

Marks for parts of questions are shown in brackets.

This examination paper carries a total of 100 marks.

All working must be shown. A numerical solution to a question obtained by programming an electronic calculator will not be accepted.

Supplementary information is given at the end of the paper.

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### Question 1

- (a) Explain the process of Project Risk Management and how each stage of risk analysis and risk response could be conducted including the techniques/tools used in each stage. (15 marks)
- (b) Define the term contingency planning and explain its importance in the project risk management process. Give examples of contingency planning for risk in project cost. (10 marks)

**Total 25 marks**

### Question 2

Table Q2 sets out the outline network programme for a refurbishment project.

**Table Q2**

Activity Reference	Duration (Weeks)	Dependency/Preceding Activity
Start	0	None
A	1	Start
B	2	Start
C	6	Start
D	10	A
E	1	B,C
F	2	C
G	3	D
H	9	E
I	1	F
End	0	G,H,I

Question 2 continued over to the next page

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**Question 2 continued.**

- (a) Generate a precedence network diagram for the refurbishment project  
(5 marks)
- (b) Please identify the paths of all activities and identify the Critical Path and explain the meaning of Critical Path.  
(10 marks)
- (c) If you are in the stage of approving the schedule and you need to reduce the whole project duration, which activities you will choose to shorten and explain why.  
(6 marks)
- (d) Explain one of the two methods for shortening the activities  
(4 marks)

**Total 25 marks**

**Question 3**

- (a) Earned Value Management (EVM) is a project management technique for measuring project performance and progress. In a single integrated system, Earned Value Management (EVM) can provide accurate forecasts of project performance problems, which is an important contribution for good project performance.

Based on the above Please answer the followings questions:

- i) Illustrate the three main parameters of EVM and the basis of calculating each of them  
(5 marks)
- ii) Please draw the EVM S-curves  
(5 marks)

**Question 3 continued over to the next page**

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**Question 3 continued.**

(b) You are the project manager of a project to build fancy birdhouses. You are to build two birdhouses a month for 12 months. Each birdhouse is planned to cost \$100 and the project is scheduled to last for 12 months.

If it is the beginning of month 10 by which you have built 20 birdhouses and if your CPI is 0.9091,

- I. What is the actual cost of the project right now? Assuming that the Cost variance experienced so far in the project will continue, how much more money will it take to complete the project?  
(3 marks)
- II. If the variance experienced so far were to stop, what will be the project's estimate at completion  
(3 marks)
- III. What is the project's TCPI using the project's budget at completion?  
(3 marks)
- IV. How is the project performing? What should you report, if the senior management wants the percentage of the project that is complete?  
(3 marks)
- V. Instead of 10 months and the cost of \$2200, if the project was in month three and costing \$4000, what formula might you use for BAC  
(3 marks)

**Total 25 marks**

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**Question 4**

- (a) Define and discuss the meaning of project, Project characteristics and the key factors of Project success or failure.

(12 marks)

- (b) Project Time Management includes the processes required to manage the timely completion of the project. Provide an overview of the Project Time Management with detail explanation on the processes in order.

(13 marks)

**Total 25 marks**

**Question 5**

- (a) Briefly explain the project management processes and illustrate 'Processes interaction' using suitable diagram.

(10 marks)

- (b) Define the term "Value Management (VM)" and explain its benefits. Illustrate how Value Management (VM) is different from Value Engineering (VE).

(8 marks)

- (c) Differentiate between project management and Operation Management using suitable diagrams.

(7 marks)

**Total 25 marks**

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**USEFUL FORMULAE**

<b>Name</b>	<b>Formula</b>	<b>Interpretation (As of today ...)</b>
Cost Variance (CV)	$EV - AC$	NEGATIVE is over budget, POSITIVE is under budget.
Schedule Variance (SV)	$EV - PV$	NEGATIVE is behind schedule, POSITIVE is ahead of schedule.
Cost Performance Index (CPI)	$\frac{EV}{AC}$	We are getting \$_____ worth of work out of every \$1 spent. Funds are or are not being used efficiently.
Schedule Performance Index (SPI)	$\frac{EV}{PV}$	We are (only) progressing at _____ percent of the rate originally planned.
Estimate at Completion (EAC)  NOTE: There are many ways to calculate EAC, depending on the assumptions made. The first formula to the right is the one most often asked on the exam.	$\frac{BAC}{CPI}$  $AC + ETC$  $AC + (BAC - EV)$  $AC + \frac{(BAC - EV)}{CPI}$	As of now, how much do we expect the total project to cost? \$ _____. See formulas at the left. <ul style="list-style-type: none"> <li>• Used if no variances from the BAC have occurred or you will continue at the same rate of spending.</li> <li>• Actual plus a new estimate for remaining work. Used when original estimate was fundamentally flawed.</li> <li>• Actual to date plus remaining budget. Used when current variances are thought to be atypical of the future. AC plus the remaining value of work to perform</li> <li>• Actual to date plus remaining budget modified by performance. Used when current variances are thought to be typical of the future.</li> </ul>
Estimate to Complete (ETC)	$EAC - AC$	How much more will the project cost?
Variance at Completion (VAC)	$BAC - EAC$	How much over or under budget will we be at the end of the project?

**END OF PAPER**