

UNIVERSITY OF BOLTON

SCHOOL OF ENGINEERING

BSc CONSTRUCTION PROJECT MANAGEMENT

SEMESTER ONE EXAMINATION 2023/2024

PROJECT FINANCE

MODULE NO: CAS5019

Date: Thursday 11 January 2024

Time: 10:00-12:00

INSTRUCTIONS TO CANDIDATES:

There are **FOUR** questions. You must answer **THREE** questions

You **MUST** answer Q1 in Section A

Answer **ANY TWO** questions in Section B

Marks for parts of questions are shown in brackets.

This Examination paper carries a total of 100 marks.

Notes and any form of annotating are not allowed in this document, but highlighting is permitted.

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SECTION A

Question 1 – YOU MUST ANSWER THIS QUESTION

- (a) Using the following information to calculate the net unit rate for:
- (i) half brick thick skins of hollow walls built entirely of facing bricks in coloured mortar (1:1:6) and pointed with a flush joint - (using directly employed labour) **(10 marks)**

 - (ii) 100 mm lightweight block wall in natural mortar (1:1:6) to receive plasterboard and skim **(10 marks)**

Materials

Facing bricks £520 per 1000 delivered and off-loaded, waste 5%

100 mm lightweight blocks £9.98 per m², waste 5%

Pre-mix coloured mortar (1:1:6) £156.13 per m³

Pre-mix natural mortar (1:1:6) £108.19 per m³

For each half brick thickness of wall allow 0.02m³ of mortar per m² of wall, plus waste 7.5%

For 100 mm block allow 0.007m³ of mortar per m² of wall, plus waste 7.5%

Directly employed labour costs

Bricklayers £19.45 per hour. Labourers £15.89 per hour

Bricklayers work in 2 + 1 gangs

One bricklayer will lay 32 bricks per hour, pointed one side

One bricklayer will lay 2.7 m² blocks per hour

- (b) Mindful of the current economic climate, discuss the risks to be considered by consultants OR contractors and their supply chains when bidding for construction work.

(20 marks)

Total 40 marks

PLEASE TURN THE PAGE FOR SECTION B....

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ANSWER ANY TWO QUESTIONS FROM SECTION B

Question 2:

- (a) Define the term earned value management (**EVM**) and discuss its main components and their implementation to assess performance of a project. **(5 marks)**
- (b) A project was planned for a budget of £200,000 and duration of 12 months. At the end of month four, it was found that only 25% of the project was completed for a cost of £75,000. Using the Earned Value method, find the following:
- (i) The project **CV, SV, CPI, SPI** at this stage **(15 marks)**
- (ii) Explain the status of the project at this stage **(5 marks)**
- (iii) Forecast the new budget (**EAC**) to complete the project if the project continued to perform at the same rate **(5 marks)**

**Total 30
 Marks**

Useful Formulae

EVM Terms and Equations

EVM Term		Definition	Formula
Planned Value*	PV	The budgeted cost for the work scheduled. For the whole project this represent the planned budget (BAC)	
Earned Value*	EV	The budgeted cost for the work actually completed.	
Actual Cost*	AC	The actual cost of the work actually completed.	
Schedule Variance	SV	The measure of schedule performance on a project.	SV = EV – PV
Question 3: Cost Variance	CV	The measure of cost performance on a project.	CV = EV – AC
Schedule Performance Index	SPI	The measure of progress achieved compared to progress planned.	SPI = EV / PV
Cost Performance Index	CPI	The measure of the value of work completed compared to the actual cost or progress.	CPI = EV / AC
Estimate at Completion	EAC	This the completion cost at which the project will continue to perform to the end as it was performing until now (i.e. future performance = past performance).	EAC = (BAC)/CPI

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Question 3:

Consider a scenario where a company is planning to undertake a new project. Evaluate the project appraisal process by addressing the following aspects:

1. Identification of Project Objectives (10 marks):

- Explain the importance of clearly defining project objectives during the appraisal phase.
- Provide examples of how well-defined objectives contribute to project success.

2. Risk Assessment and Mitigation Strategies (10 marks):

- Discuss the significance of conducting a comprehensive risk assessment during project appraisal.
- Identify and elaborate on at least three potential risks associated with initiating a new project.
- Propose effective mitigation strategies for each identified risk.

3. Financial Viability (10 marks):

- Describe the key financial metrics used in project appraisal, such as Net Present Value (NPV) and Internal Rate of Return (IRR).
- Using a hypothetical project scenario, calculate and interpret the NPV and IRR to determine the project's financial viability.
- Discuss how financial analysis influences the decision-making process during project appraisal.

Note: Provide clear explanations and support your answers with relevant examples and calculations where applicable.

Total 30 Marks

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Question 4:

In the context of property valuation, analyse and demonstrate your understanding of key concepts and methodologies:

Approaches to Property Valuation (10 marks):

- Compare and contrast the three main approaches to property valuation: income approach, sales comparison approach, and cost approach.
- Provide a hypothetical scenario for each approach, illustrating when and why one approach might be more suitable than others.

Factors Influencing Property Value (10 marks):

- Identify and discuss at least five factors that can significantly influence the value of a property.
- Explain how economic, environmental, and locational factors impact the valuation process.

Valuation Methods and Tools (10 marks):

- Describe the role of technology and data analytics in modern property valuation.
- Discuss the advantages and limitations of using Automated Valuation Models (AVMs) in the valuation process.
- Provide an example where technology enhances the accuracy and efficiency of property valuation.

Note: Articulate your responses clearly, supporting your answers with relevant examples and real-world applications wherever possible.

Total 30 Marks

Student ID Number:

END OF PAPER