

**UNIVERSITY OF BOLTON**  
**SCHOOL OF ENGINEERING**  
**BENG (HONS) CIVIL ENGINEERING**  
**SEMESTER 1 EXAMINATION 2024/2025**  
**CONSTRUCTION MANAGEMENT AND BIM**  
**MODULE NO: CIE6025**

Date: Wednesday 8<sup>th</sup> January 2025

Time: 10:00am – 1:00pm

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**INSTRUCTIONS TO CANDIDATES:**

There are SIX questions.

Answer QUESTION 1 (COMPULSORY)  
and ANY OTHER THREE questions (a  
total of four questions).

All questions carry equal marks.

Marks for parts of questions are shown  
in brackets.

This examination carries a total of 100  
marks.

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

Page 4 (with the table) can be detached  
and attached to the answer booklet

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1. Is 'Health and Safety – spend' a cost or an investment to a construction company? Critically discuss, citing relevant examples. (**Compulsory Question**).  
**25 marks**
2. Critically discuss how Project Bank Account may help in reducing insolvencies of construction firms.  
**25 marks**
3. Categorise the construction industry based on a critical synthesis of its operations and characteristics. Use relevant examples to support discussions.  
**25 marks**
4. Provide a critical commentary of how NEC4 accounts for contemporary digital application on construction projects.  
**25 marks**
5. Critically discuss the leadership/management approaches construction managers may adopt to achieve desired project success with their teams.  
**25 marks**

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6.

(a) Bolton Plc inserted a rate of £150 per m<sup>2</sup> for formwork to the retaining wall based on the agreement of a 14.5% for overheads, profit and risk combined. The retaining wall was assumed to be 30 bays which is 10 m long by 3 m high each, making a total of 1800 m<sup>2</sup> with formwork required on both sides. Before construction work commenced, the engineer issued a variation order reducing the retaining wall to 25 bays after two sets of purpose-built shutters for the two sides of the retaining wall had been ordered. The capital cost allowed for the 10 m x 3 m purpose-built steel shutters was £65,000.

Calculate a revised rate for this varied work allowing necessary assumptions.  
(8 marks)

(b) In a negotiated contracting arrangement, the client (Bolton Properties) and the contractor (Sainsco Plc) agree a 12.5% addition for overheads, profit and risk combined. In bidding for the job, Sainsco Plc provided £498,300 allowance for preliminaries and a provisional sum of £228,500 for specialist formwork designs. Compute (complete the asterisked spaces) the total tender sum laid out in the summary sheet (**Table 1 on page 4**).

(12 marks)

(c) Provide a critical commentary on subcontractor and supplier types and the discounts offered to Sainsco Plc on the contract.

(5 marks)

**Total 25 marks**

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(This page can be detached and included with your answer booklet)

Student No: \_\_\_\_\_

Table 1. Sainsco Plc Tender summary sheet

Item description	Amount (£)	Amount (£)	Discount (£)
<b>Main contractor's own work:</b>			
Material	90,000.00		12,999.00
Plants	20,456.00		
Labour	<u>240,960.00</u>		
<b>Sub-total</b>	*		
Preliminaries	<u>498,300.00</u>		
<b>Sub-total</b>	*		
Late adjustments (add/deduct)	12,636.00	→ *	
Domestic sub-contractors		780,207.00	20,968.00
<b>Prime cost and provisional sums:</b>			
Nominated subcontractors (2 1/2% discount)	914,500.00		*
Nominated suppliers (5% discount)	5,890.00		*
Prov sums: nett $\frac{1}{1.125} \times 228\,500$	*	→ *	
<b>Sub-total</b>		*	*
Cash discounts: deduct		*	
<b>Sub-total</b>		*	
Bonds and project insurances		-	
Firm price addition		10,295.00	
<b>Sub-total: estimated nett cost</b>		*	
Overheads, profit and risk: 12.5%		*	
<b>Total: tender sum to form of tender</b>		*	

**END OF QUESTIONS**