

## Estimating Practice

### 23CVB126

Semester 2 2024

In-Person Exam Paper

This examination is to take place in-person at a central University venue under exam conditions. The standard length of time for this paper is **2 hours**.

You will not be able to leave the exam hall for the first 30 or final 15 minutes of your exam. Your invigilator will collect your exam paper when you have finished.

#### Help during the exam

Invigilators are not able to answer queries about the content of your exam paper. Instead, please make a note of your query in your answer script to be considered during the marking process.  
If you feel unwell, please raise your hand so that an invigilator can assist you.

You may use a calculator for this exam. It must comply with the University's Calculator Policy for In-Person exams, in particular that it must not be able to transmit or receive information (e.g. mobile devices and smart watches are **not** allowed).

This paper consists of two sections:

Answer **ONE QUESTION** in **Section A**. Answer **ALL MCQ QUESTIONS** in **Section B**.

Use the provided answer book for **Section A** and for **Section B** you must attach the MCQ answered questions to the answer book.

Seat number:

Student ID:

Now mark off your ID, one  
digit per column:

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(F)	(1)	(1)	(1)	(1)	(1)	(1)
(B)	(2)	(2)	(2)	(2)	(2)	(2)
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**SECTION A**  
(Answer **ONE QUESTION**)

1. Construction costs broadly fit into two categories; those incurred running the actual construction company head office and those incurred running an actual project.
  - a) Discuss the distinction between project costs and head office costs in overall project management, highlighting their respective functions on a site and head office management.

[16 marks]
  - b) Labour & Project productivity is essential for efficient project management. Discuss the factors that can influence both Labour and Project productivity on a given project and why they affect overall project performance

[14 marks]
  - c) Plant can be hired or purchased. What factors does the estimator need to consider before making the decision.

[10 marks]
  
2. Alternative approximate estimating techniques are employed to set budgets and assess the feasibility of a scheme at the early stages of project development.
  - a) Discuss two methods of alternative estimating techniques, giving examples of appropriate projects for their application.

[14 marks]
  - b) Explain the basis of approximate estimating techniques and the criteria to be taken into consideration when applying them.

[10 marks]
  - c) 'Spot items' and 'Operational Estimating' can be used as an alternative to unit rate estimating. Discuss the difference between 'Spot items' and 'Operational Estimating' giving appropriate examples of application for each type.

[16 marks]

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### SECTION B

(Answer **ALL THE MCQ QUESTIONS**. Each question carries 2 marks)

**Clearly print full name / student number**

**Please sign in this box using your normal signature**

**Indicate your answers by filling in the appropriate circles**, but also write your answer (A,B,C,D) in the space above the line before the circle.

Use an HB or 2B pencil to fill in the circles.

1. What is the primary purpose of estimating in construction?

- \_\_\_ (A) To ensure the project is completed on time.
- \_\_\_ (B) To calculate the profit margin.
- \_\_\_ (C) To systematically calculate project construction and overhead cost.
- \_\_\_ (D) To select the contractor.

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2. What is the purpose of the Common Data Environment (CDE) in construction, particularly in a BIM environment?

- ☐ (A) To share drawings with the client.
- ☐ (B) To store financial data for the project
- ☐ (C) To facilitate information sharing among project stakeholders.
- ☐ (D) To calculate project profit margins.

3. What are contract documents used for in the construction industry?

- ☐ (A) To estimate project costs
- ☐ (B) To define the relationship between employer and contractor
- ☐ (C) To market the project to potential clients
- ☐ (D) To provide design details for the project

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4. Regarding taking-off quantities and producing Bills of Quantities, in traditional procurement which one of the following statements is **TRUE**?
- ☐ (A) BQ's are prepared and priced by the Contractor.
  - ☐ (B) BQ's are prepared by the Client's QS and extended by the Contractor.
  - ☐ (C) BQ's are prepared by the Contractor and priced by the trade sub-contractor.
  - ☐ (D) BQ's are extended using NRM2.
5. With regards to preparation of BQs, which one of the following statements is **INCORRECT**?
- ☐ (A) BQs represent means to tender fairly and accurately for both building and civil engineering contracts.
  - ☐ (B) BQs have very limited use in the Planning phase of a project.
  - ☐ (C) BQs are used for interim valuations by using the Bill rates multiplied by the quantity of work completed during that interim period.
  - ☐ (D) BQs can be used as a cost analysis tool during construction and assist with project planning.
6. Preparation of BQ's and Tender evaluation undertaken by the Client can be quite a complex process depending on the size of the project. From the statements below, which one is **INCORRECT**?
- ☐ (A) Arithmetic checks of the Tenderer's submitted tender rates multiplied by the BQ quantities are done by the Client's QS.
  - ☐ (B) From the Client's perspective does this Tender represent good value for money compared to others?
  - ☐ (C) Do the Tenderer's rates fall into an acceptable range of value with no evidence of front loading?
  - ☐ (D) During the estimating process the Tenderer has a duty to inform the Client of any errors in the BQs i.e. items on drawings which are specified but absent from the BQ.

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7. Which one of the below characterizes Variable Costs in construction?

- ☐ (A) They are not linked to actual construction progress.
- ☐ (B) They include rent, rates, and utilities.
- ☐ (C) They are always proportional to output.
- ☐ (D) They decrease during bad weather.

8. How does the motivation of the workforce impact Labour Productivity?

- ☐ (A) It has no effect on productivity.
- ☐ (B) Motivated workforce results in higher productivity.
- ☐ (C) It decreases overall project costs.
- ☐ (D) It increases Head Office overheads.

9. When considering site productivity what do we mean by a Non-productive work activity?

- ☐ (A) Weather stoppages and project progress.
- ☐ (B) Redoing non-compliant work.
- ☐ (C) Motivation and skill sets of the workforce.
- ☐ (D) Variable Construction Costs.

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10. How does technology contribute to construction plant choice?

- ☐ (A) Technology has no impact on plant choice.
- ☐ (B) It increases plant availability.
- ☐ (C) GPS controlled equipment can optimise productivity.
- ☐ (D) It reduces the need for skilled plant operatives.

11. What is the likely effect of choosing a Nominated subcontractor in construction?

- ☐ (A) Increase control for the main contractor.
- ☐ (B) Decreased risk for the employer.
- ☐ (C) Legal issues and disputes.
- ☐ (D) Higher overall project costs.

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12. Which one of the following would be classified as '**Special Attendance**' for a sub-contractor?
- ☐ (A) Providing covered storage and accommodation, including lighting and power.
  - ☐ (B) Use of temporary site roads, paving and pathways.
  - ☐ (C) Provision of temporary lighting and water supplies.
  - ☐ (D) Clearing away rubbish and general waste disposal.
13. Temporary Works can have a huge impact on construction costs. Which one of the following would be described as **Temporary Works**?
- ☐ (A) Formwork for edges of a concrete slab.
  - ☐ (B) A steel sheet piled cofferdam for constructing a bridge foundation in a river.
  - ☐ (C) Scaffolding to support the underside formwork of a bridge deck.
  - ☐ (D) All of the above.
14. When deciding on the profit margin to add to a tender which one of the following factors relating to the project would most likely permit the Commercial Director to 'reduce' the profit margin on this project to have a better chance of winning the bid?
- ☐ (A) The anticipated cash flow is acceptable and within company norms.
  - ☐ (B) The scope of works is clearly defined.
  - ☐ (C) Other projects the company are currently undertaking are going well and under budget.
  - ☐ (D) The legal form of contract is standard without amendments.

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15. What is the primary objective of risk management in the construction industry?
- ☐ (A) Maximising profits.
  - ☐ (B) Avoiding all risks
  - ☐ (C) Minimising the impact of uncertainties.
  - ☐ (D) Ignoring potential threats.
16. Which one of the following risks should **Not** be relevant to the Contractor constructing the works?
- ☐ (A) Inexperienced clients.
  - ☐ (B) Unforeseen ground conditions.
  - ☐ (C) Coordination problems with material suppliers.
  - ☐ (D) The completed project does not deliver the designed benefit.
17. Which stage of construction project involves identifying and assessing potential risks?
- ☐ (A) Planning.
  - ☐ (B) Design.
  - ☐ (C) Procurement.
  - ☐ (D) Construction.

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18. In a recession the use of non-standard legal forms of contract poses severe risks to the Contractor. **True or False?**
- \_\_\_ (A) True.
- \_\_\_ (B) False.
19. In attempting to identify the initial risks on the new project, which one of the following is initially likely to get more meaningful results?
- \_\_\_ (A) Brainstorming sessions with foreman and team members from previous similar projects.
- \_\_\_ (B) Ensuring your company has the latest risk analysis software installed.
- \_\_\_ (C) Transferring the whole management team from a similar project to the new one and replace them with a new team to finish the works.
- \_\_\_ (D) Analyse cashflow data from previous projects and comparing forecast costs with actual costs.
20. Risk registers are considered key control documents. From the list below which one of the definitions is **TRUE** for a Risk Register?
- \_\_\_ (A) A monthly list of identifiable risks and probability of occurrence.
- \_\_\_ (B) A live weekly list of identifiable risks with the results of their analysis.
- \_\_\_ (C) Specialist software used for modelling uncertainty, simulating combined effects of risk, and predicting outcomes.
- \_\_\_ (D) Specialist software used for modeling uncertainty, combining effects of risk, predicting outcomes, testing scenarios, and identifying critical points and determining options.

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21. Which one of the following forms the basis of qualitative risk assessment used to compile a Risk Register?

- ☐ (A) Creating Monte Carlo simulations.
- ☐ (B) Specialist construction modelling software.
- ☐ (C) Querying nature of a risk, how it can occur, probability, severity, impact, mitigation, timing, and bearer of risk.
- ☐ (D) Simulating combined risks to predict outcomes and determining options.

22. Which one of the following describes the fundamental formula for the Expected Monetary Value (EMV) method for calculating monetary risk allowances?

- ☐ (A) Allowance = risk rate x value.
- ☐ (B) Risk exposure = impact x probability.
- ☐ (C) Probability = duration x cost.
- ☐ (D) Value = likely outcome (£) x quantity.

23. Which one of the following rules is correct for EMV?

- ☐ (A) Three categories of occurrence, most likely outcome has highest value, and the three probabilities must total 1.
- ☐ (B) Three categories of occurrence, most likely outcome has lowest value, and the three probabilities of occurrence must total 1.
- ☐ (C) Three categories of occurrence, most pessimistic outcome has lowest value, and the two probabilities of occurrence must total 1.
- ☐ (D) Three categories of occurrence, most likely outcome has the average value of the three and probabilities of occurrence must total 1.

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24. Which one of the following statements relating to Method Statements (MS) is **TRUE**?

- ☐ (A) Method Statements are only used to control site procedures with an exceptionally high health & safety risk.
- ☐ (B) Method Statements are the output of BIM project software such as Revit and Navisworks which the whole construction team can share.
- ☐ (C) A Method Statement is the starting point of an estimate.
- ☐ (D) A Method Statement must comply with the Construction (Design and Management) Regulations (CDM).

25. When creating a Method Statement for a new project which one of the following statements is **TRUE**?

- ☐ (A) Consideration is given to Time, Cost, and Quality.
- ☐ (B) Consideration is given to Cost, Quality, and Location.
- ☐ (C) Consideration is given to the Overall project, Location, Time, and Constraints.
- ☐ (D) Consideration is given to the Overall project, Cost, Location, Time, and Constraints.

26. Which one of the following best describes the Storyboard Method Statement?

- ☐ (A) A tabular format with column headings of construction activities, quantities, resource types, methods of construction, production rates, resource availabilities and predicted activity durations.
- ☐ (B) A time-based sequence of activities using 2-D images.
- ☐ (C) Animated or static sequences using 3-D models.
- ☐ (D) A detailed description of the main construction of activities using sketches and text on A4 or A3 sheets showing the sequences to construct the works. Each activity will be described and will include the quantity of the work, the resources required, and an approximation of the production output of the resources.

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27. With regard to the Contractor's Cash Flow which one of the following statements is **TRUE**?

- ☐ (A) Site Labour, Plant and Material costs are paid monthly.
- ☐ (B) Site Labour and Material costs are paid weekly.
- ☐ (C) Site Labour costs are paid weekly.
- ☐ (D) Site Labour, Plant and Material costs are paid weekly.

28. Regarding monthly valuations, how long is it before the monies from an interim payment actually arrive in the Contractors bank account?

- ☐ (A) 28 days.
- ☐ (B) One calendar month.
- ☐ (C) Minimum of 2 calendar months.
- ☐ (D) 90 days.

29. With regard to project cash flow which one of the following statements is **True**?

- ☐ (A) Negative cash flow has only a limited impact as it is regarded as normal project practice.
- ☐ (B) If more money is coming into the company than going out then cash flow is said to be negative.
- ☐ (C) Negative cash flow isn't just an issue for the main contractor it can affect the whole supply chain with potential serious consequences to the main contractor.
- ☐ (D) Positive cash flow is generally the cash state at the beginning of the contract and moves gradually negative as the project nears completion.

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30. At the end of the estimating process, after the Chief Estimator has checked everything, the final estimate is presented to the company's Commercial Directors. The directors are then at liberty to take a global view and change the Estimated Sum into a Tender Sum. This may be higher or lower than the figure presented by the Chief Estimator. Is this statement **True or False?**

\_\_\_ (A) True.

\_\_\_ (B) False