

## **Exam Questions for June 2022**

### **CONSTRUCTION BUSINESS ENVIRONMENT**

**ANSWER ONLY 1 OF THE QUESTIONS. You are allowed 4 attachments. 1 must be the front cover sheet.**

**Q.1)**

**Refer to your drawings and scenario**

**The project is being procured on a traditional design-bid-build basis with design being undertaken by a design team comprising an integrated architectural and engineering design practice.**

**The Main Contractor is selecting groundworks sub-contractors for the tender list. You are a groundworks subcontractor that has been invited for a preliminary interview for possible inclusion on the tender list.**

**The site has complex contamination and engineering challenges, which potential tenderers have been told that they must demonstrate that they have prior relevant experience and knowledge of in order to be invited to tender.**

**TASK:**

**You have been asked by the Main Contractor to submit a concise document prior to your interview that covers:**

**A) Why you consider which specific aspects of legislation, and why which specific environmental concepts will have a significant impact on the works within the groundworks package.**

**(20 Marks)**

**B) The specific performance monitoring methods your company proposes to use to ensure compliance with the project's master programme.**

**(5 Marks)**

**C) How your company proposes to measure specific aspects of its performance in terms of social responsibility to both the workforce and the neighbouring community.**

**(5 Marks)**

**OR**

**Q.2)**

**Refer to your drawings and scenario**

**The project is being procured on a traditional design-bid-build basis with design being undertaken by a design team comprising an integrated architectural and engineering design practice.**

**You are the groundworks contractor for the development. You have commenced work on site to maintain the Main Contractor's master programme on the basis of a letter of intent which has a capped level of expenditure.**

**You are currently remediating the site and are approaching the capped authorised level of expenditure that was stipulated by the Client.**

**The lead in period for the precast piles required you to place an order a week ago to avoid a delay to the programme but the cap would be breached by doing so.**

**The Main Contractor says that they have reflected the terms of their engagement with the Client in setting the capped level and are seeking further instruction from the Client and so are unable to issue further instruction at this stage.**

**Stopping work without completing the remediation process could present increased ecological and biological hazards to the site and its surrounding area.**

**You have a good relationship with the Main Contractor which you wish to preserve, as does the Main Contractor with the Client.**

**TASK:**

**Produce a report, with an executive summary for the Board of Directors of the groundworks company, to be sent on to the Main Contractor. The report should explain the predicted hazards and potential programme outcomes, together with the options available to your groundworks company and to the Main Contractor, failing further action by the client.**

**(30 Marks)**

## **MANAGEMENT**

**ANSWER ONLY 1 QUESTION. You are allowed 4 attachments. 1 must be the front cover sheet.**

**Q.1)**

**Refer to your drawings and scenario**

Explain, with illustrations on the site plan, an effective method of managing and controlling the movement of materials, plant, and equipment during construction of the centre, including the provision of storage, temporary protection, and security.

**(30 Marks)**

**OR**

**Q.2)**

**Refer to your drawings and scenario**

**TASK:**

A) Describe the types of construction programmes that may be used for the centre development and select the most appropriate explaining reasons for your choice.

**(10 Marks)**

B) In constructing the move-on flats, pods are to be used for the bathroom facilities. Part way through the project, the main contractor is informed that delivery of the fully fitted and plumbed bathroom pods will be delayed by two months. As the Site Manager, consider the implications and then prepare a programme for the development illustrating the impact this will have on project completion time, and show how the project programme may be revised to avoid a project overrun.

**(20 Marks)**

## **HEALTH, SAFETY AND WELFARE**

### **ANSWER ONLY 1 QUESTION**

**You are allowed 4 attachments. 1 must be the front cover sheet.**

**Q.1)**

**Refer to your drawings and scenario**

#### **TASK:**

A) Identify key health and safety issues in relation to the project.

**(10 Marks)**

B) Develop a strategy for dealing with these issues and communicating the implications to the workforce.

**(20 Marks)**

**OR**

**Q.2)**

**Refer to your drawings and scenario**

#### **TASK:**

A) From a health and safety perspective identify the key risks/hazards associated with the excavation and disposal of contaminated material.

**(10 Marks)**

B) Prepare a Risk Management strategy for the Main Contractor to deal with these contaminated materials which maintains the wellbeing of all stakeholders

**(20 Marks)**

## **CONSTRUCTION TECHNOLOGY**

### **ANSWER ONLY 1 QUESTION**

You are allowed 6 attachments. 1 must be the front cover sheet.

**Q.1)**

**Refer to your drawings and scenario**

#### **TASK:**

As the Design Manager, prepare an illustrated technical report for the Project Manager, that describes and evaluates viable options and their preferred solution for the following aspects of the development:

A) The construction of the Core House superstructure including transmission of imposed loads to a suitable substructure.

**(12 Marks)**

B) Provision of an active and passive fire engineering solution for the development.

**(12 Marks)**

C) Opportunities for the incorporation of prefabrication and off-site construction for the Move-On Flats.

**(6 Marks)**

**OR**

**Q.2)**

**Refer to your drawings and scenario**

**Since the original conceptual design was developed, as shown on the drawings provided, the following events have occurred:**

**The price of steel has increased dramatically.**

**Local legislation has been introduced to encourage the incorporation of new higher standards of thermal insulation.**

**Grants are now available to encourage on-site energy generation for public buildings.**

#### **TASK:**

**As the contractor's Design Manager, prepare an illustrated technical report for the Project Manager that considers the implications for the project by changing the main structural members from steel to concrete. Your report should also consider possible improvements that can be made to the thermal insulation of the external elements. Your report should address these specific areas.**

A) The construction of both the Core House and the Move-On Flats utilising concrete structural members, suitable foundations, and improved external envelope insulation.

**(15 Marks)**

B) Strategies and options to increase on-site energy generation.

**(10 Marks)**

C) Compare off site precast concrete for structural members and floors to ready mixed insitu concrete.

**(5 Marks)**