Management of Design and Construction
22CVB103

Semester 2 2023 | 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).

Section A, question 1 is compulsory – you MUST answer this question.

Answer **TWO** questions from Section B.

All questions carry equal marks.

Continues/…

…/continued

SECTION A

(Answer **THIS** question)

1 a) Define a risk.

[8 marks]

b) Explain the purpose of a risk register in effective project risk management.

[8 marks]

c) Explain how risk is typically quantified in a risk register and evaluate the quality of the insight gained.

[8 marks]

d) A risk register is often described as a "live" document. Explain what this means in the practice of effective project risk management. In your explanation, identify underlying principles as well as practical activities.

[9 marks]

SECTION B

(Answer **TWO** questions)

2 a) Explain how TRIZ can promote creativity in engineering design.

[8 marks]

b) Explain the purpose of the double diamond approach to design thinking.

[8 marks]

c) Explain the design fixity problem.

[9 marks]

d) Explain the purpose of the Job Plan

[8 marks]

3 a) Explain the difference between value management and value engineering.

[8 marks]

b) Provide an example of a problem typically addressed by value management. Explain why value management is an appropriate technique to use to address problems of that type.

[7 marks]

c) Provide an example of a problem typically addressed by value engineering. Explain why value engineering is an appropriate technique to use to address problems of that type.

[7 marks]

Question 3 continues/…

d) Functionally analyse the door through which you entered the building you are currently in. Present your analysis as a list of around ten functions, expressed using the principles of function analysis.

[11 marks]

4 a) Estimating and tendering represent a key phase of the pre-construction stage. Clients and / or project managers may adopt different methods for tendering depending on various factors. Critically discuss five types of tendering methods showing their main characteristics and advantages or disadvantages.

[20 marks]

b) Critically describe what is meant by 'temporary works' within the context of estimating and tendering for construction projects explaining their importance and giving three examples of temporary works.

[13 marks]

5 a) Other than the skills challenge, identity and discuss **three** challenges facing UK construction industry. Discuss how recent industry reports e.g., the Construction Sector Deal (2018), the National Infrastructure Strategy (2020), the National Infrastructure and Construction Pipeline (2021) and ICE State of the Nation (2022) suggest mitigating against the three challenges.

[9 marks]

b) Your employer is a construction contractor tendering for a new viaduct to cross a valley. The contractor's Senior Planners are arguing about which planning technique should be used for the Master Programme. The short list consists of Gantt Charts, Precedence Diagrams and Time Chainage Diagrams. Explain these techniques and provide arguments on how you would convince the Planners to choose the most relevant technique.

[9 marks]

c) Skills shortages are a major challenge for many UK contractors. You are a Project Manager with a project due to start in a few months. Discuss how you would approach the management of your site resources to make sure you have the resources needed in the required quantity, with the right skills and at the right time for your project.

[9 marks]

d) Explain the importance of controlling a project's progress. Briefly discuss **two** tools available for reducing a project's duration if it is running late.

[6 marks]

J Mackenzie