



## Principles of Design and Construction 23CVP322

Semester 1 2023-24

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 **3 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 **not** use a calculator for this exam.

Answer **THREE** questions.

All questions carry equal marks.

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1. (a) (i) Outline the various paradigms of design which have been proposed in design research literature in recent years. [8 marks]  
(ii) As the construction industry undergoes digital transformation, which paradigm do you feel most accurately describes design in current practice? Justify your answer. [5 marks]
- (b) You work as a Design Manager for a large general contractor which is bidding for a major residential development in the East Midlands (50 bespoke, high-end homes). Your employer firm is renowned for recognising the importance of design management and hiring the best design managers. What text would you include in the bid to strengthen your tender based on your design management expertise? [20 marks]

2. (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 **four** types of tendering methods showing their main characteristics and advantages or disadvantages. [16 marks]  
(b) For contractors to produce a successful estimate, estimators need to identify various categories of fixed and time related overheads. Discuss **five** categories of project overheads explaining the difference between fixed and time related overheads. [17 marks]
3. (a) In the lead up to the “submission of a tender document” milestone:
  - (i) Identify and critically discuss **two** main tasks that need to be undertaken by a project’s consultant. [6 marks]  
(ii) Identify and critically discuss **two** main tasks that need to be undertaken by a project’s main contractor. [6 marks]
  - (b) Several techniques may be used to plan complex construction projects. Describe the main planning techniques and identify the types of projects they are best suited for. Discuss the advantages and disadvantages of each technique. [12 marks]
  - (c) Lean Construction principles and its use of the Last Planner conflicts with more traditional forms of planning that set out what should be done at an early stage. Critically discuss this statement and make a concluding argument. [9 marks]

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4. (a) Critically discuss the importance of resource analysis in both design and construction firms. [12 marks]

(b) Critically explain the importance of monitoring progress on complex construction projects. Discuss the tools that can be used for controlling progress and how they are used. [10 marks]

(c) Delay and Disruption are major burdens for construction project stakeholders. Giving examples, critically discuss the main types of delay events that can be attributed to the key stakeholders. Identify and explain **two** categories of techniques used to determine the Extension of Time. [11 marks]

P Carrillo  
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