

Modern Methods of Construction (MMC) 22CVC040

Semester 2 2023

Online Short-window Exam paper

This is an online short-window examination, meaning you have a total of **2 hours plus an additional 30 minutes** to complete and submit this paper. The additional 30 minutes are for downloading the paper and uploading your answers when you have finished. If you have extra time or rest breaks as part of a Reasonable Adjustment, you will have further additional time as indicated on your exam timetable.

It is your responsibility to submit your work by the deadline for this examination. You must make sure you leave yourself enough time to do so.

It is also your responsibility to check that you have submitted the correct file.

Exam Help

If you are experiencing difficulties in accessing or uploading files during the exam period, you should contact the Exam Helpline. For urgent queries please call **01509 222900**.

For other queries email examhelp@lboro.ac.uk

You may handwrite and/or word process your answers, as you see fit.

You may use a calculator for this exam.

Answer **THREE** questions.

All questions carry equal marks.

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- 1 a) You work in the digital consultant team for a project that aims to build a skyscraper in central London. Your team is asked to evaluate the potential digital technologies that could be used to improve the project construction performance.

Critically evaluate *one* digital technology or technique for each of the following *four* purposes:

- i) capturing/collecting,
- ii) modelling,
- iii) sharing/coordinating, and
- iv) analysing, onsite information and data during the construction phase in this project.

The evaluation should explain *why* the technology is appropriate, and *potential challenges* regards its effective implementation.

[16 marks]

- b) Compare and contrast from an innovation standpoint *three* different examples of recent *innovative automation examples* in the UK construction sector, comparing for each of them:

- i) what they are;
- ii) why they are being used;
- iii) their advantages and limitations; and
- iv) how innovative they are.

[17 marks]

- 2 Offsite techniques are commonly promoted in the construction press and emphasised in UK Government reports.

- a) Provide a balanced argument, with examples, to answer the question: “*Is offsite innovation?*”

[8 marks]

- b) Discuss whether this is now the time where offsite construction really ‘takes off’ in the UK.

[6 marks]

- c) Compare and contrast how the different levels of offsite affect the design and construction process, with an example for each level.

[11 marks]

- d) Describe how Brexit and the war in Ukraine has affected the take up of offsite construction in the UK and Europe.

[8 marks]

Continues/...

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- 3 Product Platforms are being increasingly promoted in construction by the UK government.
- a) Summarise and describe the recent and emerging UK policy landscape relating to Product Platforms in construction. [11 marks]
 - b) Describe and define what a product platform is, provide some examples from other industries and describe why the construction industry is different and unique compared with other industries. [12 marks]
 - c) Compare and contrast some of the advantages and disadvantages of a platform approach to construction, using examples to support your argument. [10 marks]
- 4 Throughout history, people have been attracted to cities as centres of culture, learning, and economic opportunity. Thus, creating pressure for more useable space for living and working, which in turn has led to various technical innovations. With this in mind:
- a) Critically evaluate the main challenges in exploiting 'Air Rights' over structures providing examples to support your answer. [8 marks]
 - b) Describe with sketches the top-down method of deep basement construction. Which are the main challenges to be addressed, and why? [10 marks]
 - c) Compare and contrast past and future challenges faced by designers and constructors of multi-storey buildings and explain how these challenges have been or could be addressed. What is the biggest challenge of the future, and why? [15 marks]

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