



### General instructions

- Use black or blue ball-point pen.
- The marks for questions are shown in brackets.
- This examination contains **24** questions. Answer **all** questions.
- Answer the questions in the spaces provided. Answers written in margins or on blank pages will **not** be marked.
- Cross through any work you do not want to be marked.

The exam has been split into **two** sections.

Below details the types of questions and marks available for each section. Please allow time for each section accordingly.

**Section A** is made up of **60** marks and includes **20** low tariff and medium tariff, short answer questions, which target recall of knowledge, demonstration of understanding **and** application of knowledge and understanding.

**Section B** is made up of **30** marks and includes **3** extended response questions, which target application of knowledge and understanding **and** analysis and evaluation of information and issues.

## Section A

1. State **two** principles of material science that must be considered during the construction design process.

[2 marks]

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2. State the **two** factors, along with Force, used to determine the mechanical power required to move a load.

[2 marks]

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3. During the design stage there are various methods used to display the overall finished look of a project.

State **two** of these methods.

[2 marks]

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4. State **two** pieces of information that can be obtained from a Gantt chart?

[2 marks]

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5. State **two** materials that would reduce the transmission of sound.

[2 mark]

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6. Give **one** advantage and **one** disadvantage that the use of a laser level has over traditional levels.

[2 marks]

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7. Describe how a critical path network is used to plan specific tasks within a construction project.

[2 marks]

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8. A 1000 mm deep trench 300 mm wide and 2500 mm long has been dug for a strip foundation. The original plans detailed a 300 mm deep layer of concrete, but it has been decided to fill the trench to the top.

Calculate how much **extra** concrete will be required, rounded to **two** decimal places.

Show your workings below.

[2 marks]

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9. Give **two** examples of how construction companies can incorporate corporate social responsibility (CSR) into construction projects.

[2 marks]

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10. Give **two** examples of where conflict can arise between a client and their main contractor during a domestic construction project and the conflict management techniques used to resolve them.

[4 marks]

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11. Describe **two** ways that sound can enter a building from the outside and **two** design features that will help keep sound out of the building.

[4 marks]

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12. Describe **two** behaviours, putting each into context, that would help maintain good relationships with customers during domestic construction projects.

[4 marks]

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13. Explain **two** effects moisture can have on construction materials.

[2 marks]

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14. Calculate the energy required to raise a 20 kg mass a distance of 15 m.

Show your workings below.

[2 mark]

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15. Explain how photovoltaic energy is generated in a domestic dwelling.

[5 marks]

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18. A new build office is to be illuminated. The client is considering the installation of light tunnels in the roof space to allow for natural lighting and has asked for your opinion.

Describe **four** benefits of utilising natural lighting in a building with regards to a person's health.

[4 marks]

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19. As part of a design process for a new inner-city medical centre, you are asked to assess the building performance of similar projects in other cities.

Whilst assessing a buildings performance various criterion are used, describe **two** criteria.

[4 marks]

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20. You are working as a site manager in charge of a large refurbishment project of an NHS hospital.

Explain the actions you will take to ensure you adhere with your responsibilities for overseeing health and safety of employees working on site in line with the Health and Safety at Work Act 1974.

[6 marks]

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