



NSW Education Standards Authority

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Centre Number

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Student Number

2023 HIGHER SCHOOL CERTIFICATE EXAMINATION

Construction

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black pen
- Calculators approved by NESA may be used
- Write your Centre Number and Student Number at the top of this page and pages 9, 11, 13 and 17

Total marks: 80

Section I – 15 marks (pages 2–5)

- Attempt Questions 1–15
- Allow about 20 minutes for this section

Section II – 35 marks (pages 9–18)

- Attempt Questions 16–19
- Allow about 50 minutes for this section

Section III – 15 marks (page 19)

- Attempt Question 20
- Allow about 25 minutes for this section

Section IV – 15 marks (page 20)

- Attempt Question 21
- Allow about 25 minutes for this section

Section I

15 marks

Attempt Questions 1–15

Allow about 20 minutes for this section

Use the multiple-choice answer sheet for Questions 1–15.

- 1** A block of land is measured to be 205 metres long.
- Which of the following is most likely to have been used to measure this length?
- A. A string line
 - B. Four fold rule
 - C. Trundle wheel
 - D. Retractable tape
- 2** Which type of construction plan contains a North symbol?
- A. Site
 - B. Detail
 - C. Elevation
 - D. Longitudinal
- 3** What is the primary purpose of workers wearing ‘high vis’ clothing on a construction site?
- A. To keep the workers warm
 - B. To advertise a construction company
 - C. To be seen easily on a construction site
 - D. To show the workers are part of a construction team
- 4** When ordering timber in the construction industry, the unit used is metres. However, plans are in millimetres.
- Which length is the same as 330 mm?
- A. 0.033 m
 - B. 0.330 m
 - C. 3.30 m
 - D. 33.0 m

- 5 Which is the most appropriate method to manage dust on a recently demolished building site?
- A. Damping the area
 - B. Using hessian fencing
 - C. Covering with matting
 - D. Wearing breathing apparatus
- 6 An image of a sign is shown.

BUILDING COMPANY	
BUILDER _____ BUILDERS REG. NO. _____ PHONE _____ SITE ADDRESS _____ SITE SUPERVISOR _____ PHONE _____ A/H CONTACT NUMBER _____ NEAREST MEDICAL CENTRE _____ NEAREST HOSPITAL _____ EMERGENCY EVACUATION AREA IS _____	
<div style="background-color: black; color: white; text-align: center; padding: 5px; border-radius: 15px; margin-bottom: 5px;">DANGER</div> <p style="text-align: center; margin: 0;">CONSTRUCTION SITE</p> <p style="text-align: center; margin: 0; font-size: small;">UNAUTHORISED PERSONS KEEP OUT</p>	
<p>PROTECTIVE EQUIPMENT</p> <p>MUST BE WORN</p> <p>BEYOND THIS POINT</p>	
<p>ALL CONTRACTORS MUST HAVE PROOF OF INDUSTRY SAFETY INDUCTION TRAINING PRIOR TO COMMENCING WORK</p>	
 <p style="text-align: center; margin: 0; font-size: small;">ALCOHOL AND DRUGS NOT PERMITTED ON THIS SITE</p>	<p style="text-align: center; margin: 0; font-size: small;">IN CASE OF EMERGENCY CALL 000 AND CONTACT THE SITE MANAGER ON MOBILE NUMBER PROVIDED</p>
<p>ACCESS TO THIS SITE IS PERMITTED ONLY BY PREVIOUS ARRANGEMENT WITH THE BUILDER</p>	

Where should this sign be placed on a building site?

- A. On a social notice board
- B. Outside the lunch room
- C. On all vehicles that enter the site
- D. On the fence where you enter the site

- 7** On a construction site, a jackhammer could be used for which of the following tasks?
- A. Breaking up brick walls
 - B. Attaching masonry anchors
 - C. Removing unwanted tree stumps
 - D. Connecting frames to concrete slabs

- 8** What is the purpose of a residual current device (RCD)?
- A. To save electricity
 - B. To allow companies to read power usage
 - C. To allow more than one machine to be used
 - D. To isolate the power if an electrical fault occurs

- 9** What is ACM an abbreviation for?
- A. Asbestos Containing Material
 - B. Australian Consumer Mission
 - C. Australian Concrete Marketing
 - D. Asbestos Construction Manufacturer

- 10** Why are pictorial drawings used in the construction industry?
- A. They are quick to produce.
 - B. They provide site safety information.
 - C. They provide a 3D representation for the customer.
 - D. They show the setting-out dimensions and orientation.

- 11** A house is to be built on a recently cleared block of land.

What would a surveyor use to outline the initial external perimeter for this building site?

- A. Fences and stays
- B. String lines and profiles
- C. Star pickets and string lines
- D. Painted pegs and ground spray

12 What does it mean if an electric plane has a lock-out tag attached to it?

- A. It is in a dangerous condition.
- B. It can only be used by a supervisor.
- C. It has had a new cutting blade fitted.
- D. It is ready for use and has just been serviced.

13 A worker needs to move 10 lots of 20 kg bags of cement.

What is the correct manual handling technique?

- A. Wide stance, straight back, lift with arms
- B. Narrow stance, straight back, lift with legs
- C. Wide stance, looking forward, lift with legs
- D. Narrow stance, looking forward, lift with arms

14 A trench, 3 m long \times 1.5 m wide \times 0.2 m deep, needs to be excavated on a construction site.

What is the total amount of soil that needs to be excavated?

- A. 0.09 m³
- B. 0.9 m³
- C. 9 m³
- D. 90 m³

15 Which of the following plan drawings would show the pitch of the roof?

- A. Site
- B. Floor
- C. Detail
- D. Elevation

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Centre Number

Construction

Section II

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Student Number

35 marks

Attempt Questions 16–19

Allow about 50 minutes for this section

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

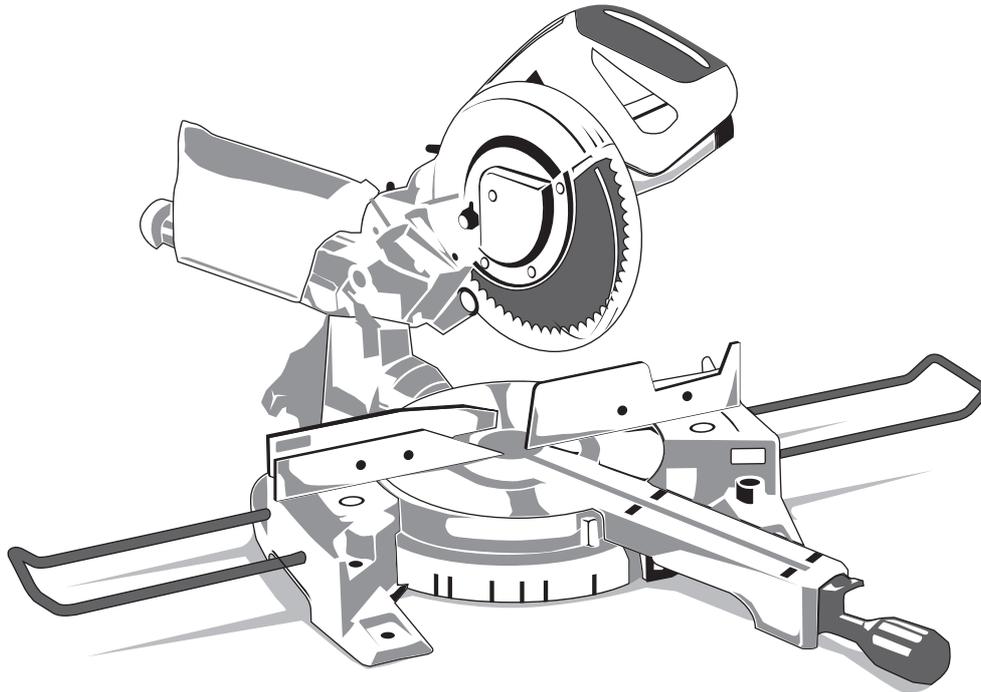
Show all relevant working in questions involving calculations.

Question 16 (6 marks)

Please turn over

Question 16 (6 marks)

(a) A common type of saw used in construction is shown.



(i) What type of saw is this? **1**

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(ii) List TWO items of personal protective equipment (PPE) required when using this saw. **2**

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(b) Outline the advantages of using battery-powered tools and equipment. **3**

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Centre Number

Construction

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Student Number

Section II (continued)

Question 17 (10 marks)

- (a) A construction worker and the employer cannot agree on the correct amount the worker should be paid. **2**

How could this disagreement be resolved?

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- (b) Describe the personal attributes that the construction industry values in its workers. **3**

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Question 17 continues on page 12

Question 17 (continued)

- (c) Following the renovation of a residential house, many left over substances and materials require disposal.

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Describe the process of disposal of these substances and materials during the final stages of clean-up.

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End of Question 17

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Centre Number

Construction

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Student Number

Section II (continued)

Question 18 (10 marks)

- (a) Describe methods that can be used to limit the noise of a generator on a construction site. **3**

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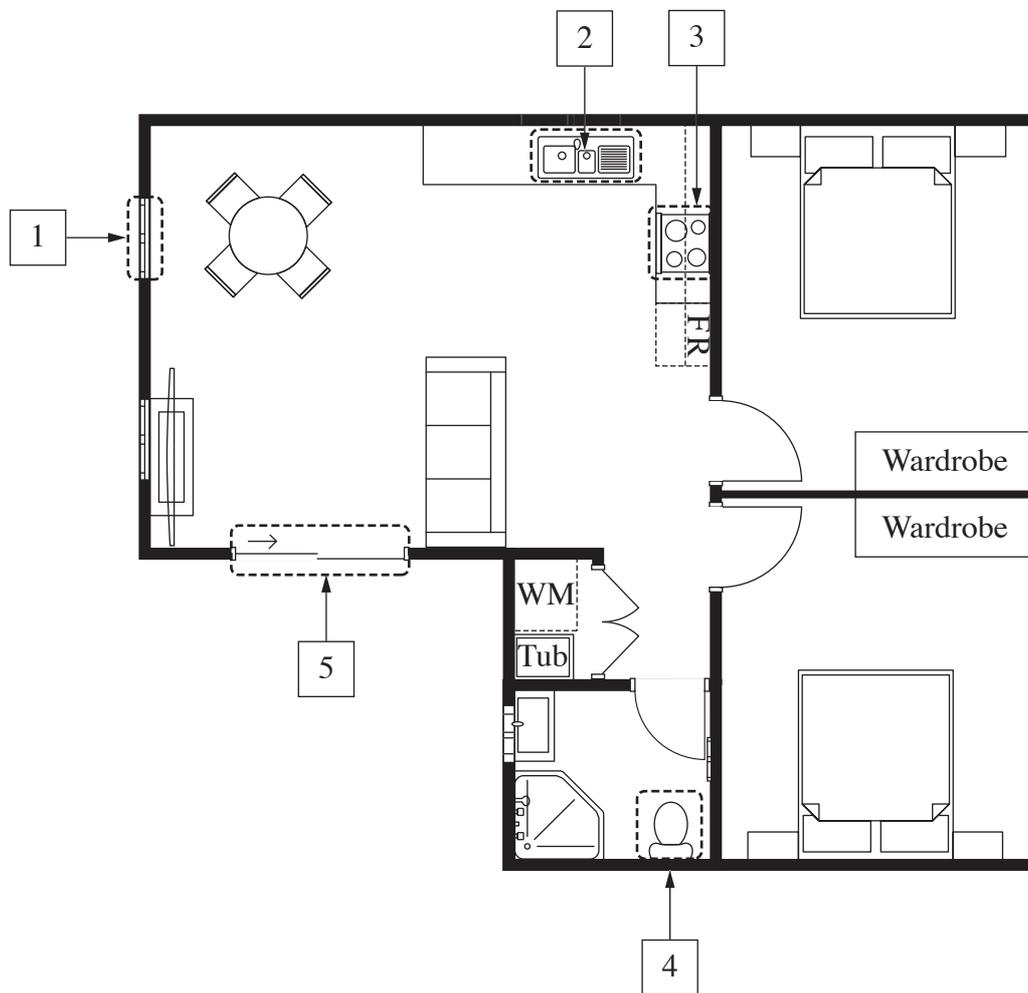
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Question 18 continues on page 14

Question 18 (continued)

(b) The drawing shows the plan of a house. Some features have been numbered.

3



Complete the table by identifying the numbered features.

<i>Number</i>	<i>Name of feature</i>
1
2
3
4
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Question 18 continues on page 15

Question 18 (continued)

(c) Explain why symbols are used on construction plans.

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End of Question 18

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Centre Number

Construction

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Student Number

Section II (continued)

Question 19 (9 marks)

- (a) A builder is constructing a house that requires 15 000 bricks. A full pallet of bricks has 500 bricks. **2**

How many pallets of bricks will need to be ordered? Allow for 10% wastage.

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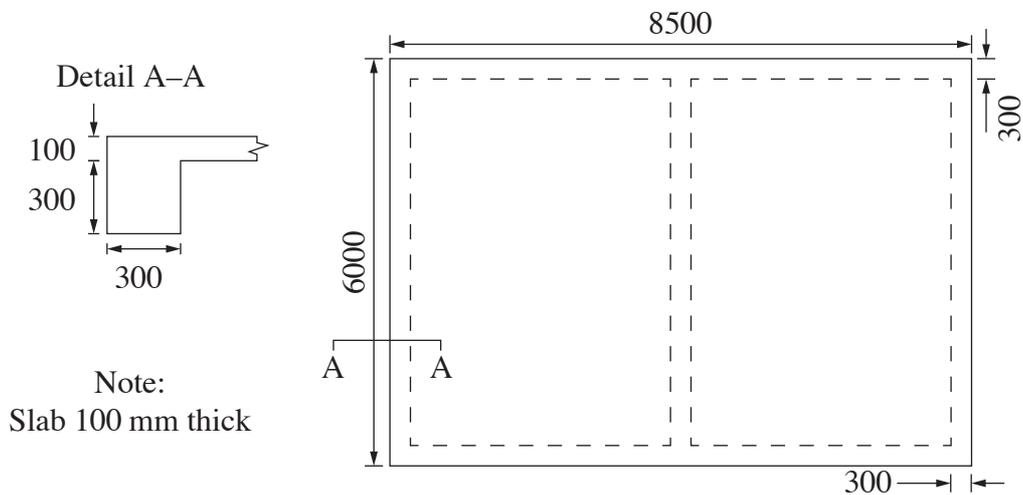
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Question 19 continues on page 18

Question 19 (continued)

- (b) A shed is to be built on a concrete slab with concrete footings.

The drawing shows the hidden detail of the edge and centre beams required for the footings of the shed.



- (i) Calculate how many cubic metres of concrete are required for the footings. 5

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- (ii) How many cubic metres of concrete are required for the slab? 2

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End of Question 19

Construction

Section III

15 marks

Attempt Question 20

Allow about 25 minutes for this section

Answer this question in TWO SEPARATE writing booklets. Use one writing booklet to answer part (a) of the question. Use the other writing booklet to answer part (b) of the question. Extra writing booklets are available.

Question 20 (15 marks)

A builder is constructing a group of 12 three-bedroom units on a large site. A variety of trades will be working on this project.

Answer part (a) of the question in a writing booklet.

- (a) Describe appropriate ways that different trades can communicate with each other during the building process. **5**

Answer part (b) of the question in a SEPARATE writing booklet.

- (b) Explain how work sequencing should be planned and organised for this site. Support your answer with relevant workplace examples. **10**

Please turn over

Section IV

15 marks

Attempt Question 21

Allow about 25 minutes for this section

Answer the question in a SEPARATE writing booklet. Extra writing booklets are available.

Your answer will be assessed on how well you:

- demonstrate knowledge and understanding relevant to the question
 - communicate ideas and information using relevant workplace examples and industry terminology
 - present a logical and cohesive response
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Question 21 (15 marks)

Explain how the risk control hierarchy can be used to manage hazards on a construction site. Support your answer with relevant workplace examples.

End of paper