



B O A R D O F S T U D I E S
NEW SOUTH WALES

2005

**HIGHER SCHOOL CERTIFICATE
EXAMINATION**

Construction

General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of pages 9 and 13

Total marks – 80

Section I Pages 2–7

15 marks

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

Section II Pages 9–16

35 marks

- Attempt Questions 16–23
- Allow about 45 minutes for this section

Section III Pages 17–19

30 marks

- Attempt TWO questions from Questions 24–26
- Allow about 1 hour for this section

Section I

15 marks

Attempt Questions 1–15

Allow about 15 minutes for this section

Use the multiple-choice answer sheet.

Select the alternative A, B, C or D that best answers the question. Fill in the response oval completely.

Sample: $2 + 4 =$ (A) 2 (B) 6 (C) 8 (D) 9
A B C D

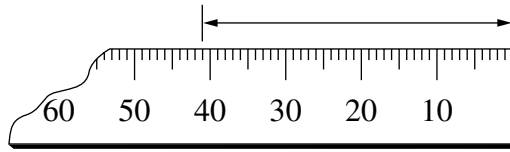
If you think you have made a mistake, put a cross through the incorrect answer and fill in the new answer.

A B C D

If you change your mind and have crossed out what you consider to be the correct answer, then indicate the correct answer by writing the word *correct* and drawing an arrow as follows.

A B C D
correct ↙

1 A tape measure is shown.



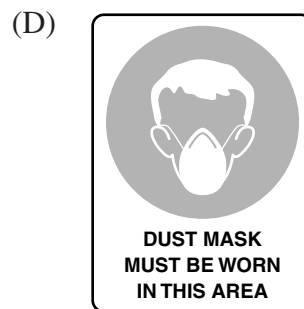
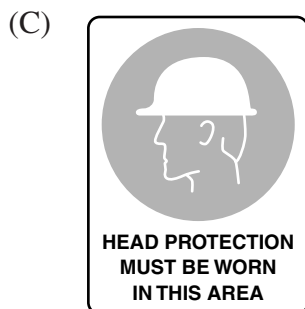
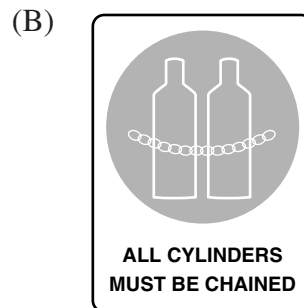
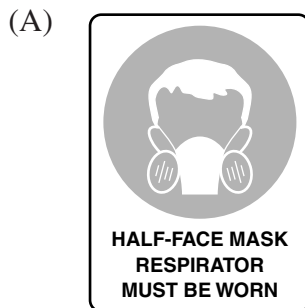
What is the dimension shown on the tape measure?

- (A) 41 cm
 - (B) 41 mm
 - (C) 0.41 m
 - (D) 0.041 mm
- 2 When ordering timber, what is the correct order length for 3.5 metres?

- (A) 3.0 m
- (B) 3.5 m
- (C) 3.6 m
- (D) 4.0 m

3 A builder is preparing to use spray-painting equipment. Hazard control is required.

Which of the following signs is the most suitable to advise workers?



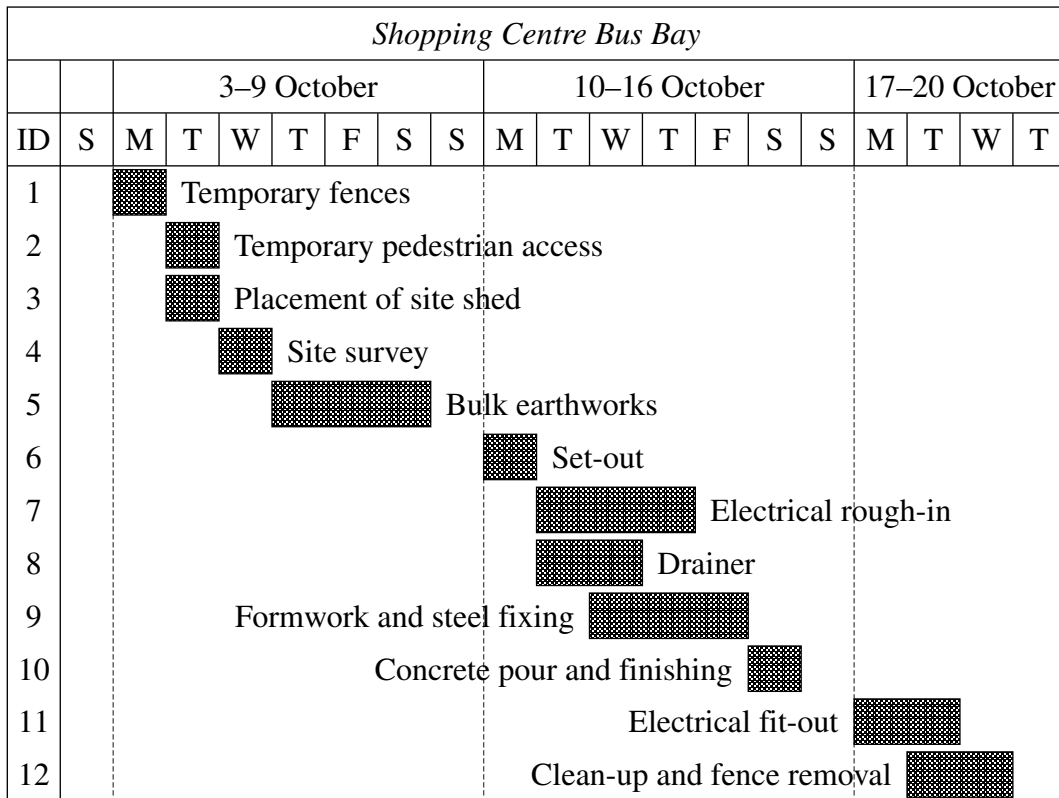
4 What does this symbol represent on a floor plan?



- (A) Dishwasher
 - (B) Glazed window
 - (C) Shower recess
 - (D) Water closet
- 5 Which is the most appropriate ladder to use when carrying out electrical work at a height of 4.8 m?
- (A) Wooden step ladder
 - (B) Aluminium step ladder
 - (C) Wooden extension ladder
 - (D) Aluminium extension ladder
- 6 A portable angle grinder is being used to cut stone. The abrasive disc is wearing, generating a large amount of dust.
- Using OHS principles, which of the following is the preferred action?
- (A) Check and replace the disc.
 - (B) Clear the air vents around the motor.
 - (C) Turn the angle grinder off and let it cool down.
 - (D) Substitute with a less hazardous cutting method.
- 7 Which of the following would be the most appropriate piece of equipment to use prior to laying pavers?
- (A) Backhoe
 - (B) Compressor
 - (C) Concrete mixer
 - (D) Plate compactor

- 8** Which of the following best describes the role of the Site Manager?
- (A) Runs day-to-day activities.
 - (B) Organises the costing of the site.
 - (C) Finds sites to construct large buildings.
 - (D) Supervises the Construction and Project Managers.
- 9** You are working with an apprentice installing lights on a high factory ceiling. The apprentice tells you that they have never worked at heights before.
- Which is your most appropriate immediate response?
- (A) Talk to the apprentice about work platform use.
 - (B) Ask the apprentice to wait while you do the work.
 - (C) Tell the apprentice to discuss the issue with their supervisor.
 - (D) Tell the apprentice not to be concerned and to continue working.
- 10** Which of the following is an appropriate method of costing work?
- (A) The Australian Standards
 - (B) Cordell's Building Costing
 - (C) The Builders Code of Costings
 - (D) Building Association of Australia Costing
- 11** Which of the following is the most appropriate scale to use on floor plan drawings of a single-storey residence?
- (A) 1 : 50
 - (B) 1 : 100
 - (C) 1 : 200
 - (D) 1 : 500

Use the chart shown to answer Questions 12 and 13.



- 12** Which of the following best describes the purpose of the chart?
- (A) To establish a start date
 - (B) To reduce construction time
 - (C) To plan the building sequence
 - (D) To determine the number of trades required
- 13** On 6 October the Site Supervisor is notified that the site must be closed for one work day.
- What is the most appropriate day for the Site Supervisor to close the work site?
- (A) Friday 7 October
 - (B) Wednesday 12 October
 - (C) Saturday 15 October
 - (D) Monday 17 October

14 A single skin brick wall contains 50 bricks per square metre.

How many bricks are required for a brick wall measuring 6.5 m long by 3.75 m high by 230 mm wide? (Allow 5% waste.)

- (A) 1219
- (B) 1280
- (C) 2438
- (D) 2560

15 A casual worker is paid a flat rate of \$18 per hour and keeps the following time sheet.

Employer name: MBA		Pay rate: \$18.00/hour		
Employee name: Alec Smart		Week: 22–28 Sept		
<i>Day</i>	<i>Sign on</i>	<i>Sign off</i>	<i>Unpaid meal break</i>	<i>Total worked hours</i>
Monday	7.30 am	3.30 pm	30 minutes	
Tuesday	7.30 am	5.00 pm	30 minutes	
Wednesday	–	–	–	
Thursday	7.00 am	10.00 am	–	
Friday	–	–	–	
Saturday	7.30 am	4.30 pm	30 minutes	

How much will the worker earn?

- (A) \$477
- (B) \$486
- (C) \$504
- (D) \$531

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Construction

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Centre Number

Section II

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Student Number

35 marks

Attempt Questions 16–23

Allow about 45 minutes for this section

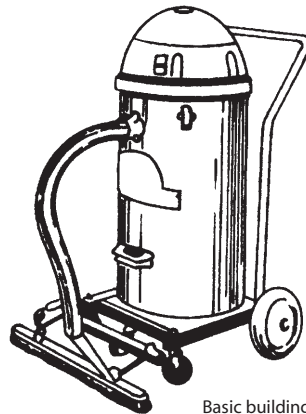
Answer the questions in the spaces provided.

Marks

Question 16 (3 marks)

Industrial vacuum cleaners are designed to remove dusts, including hazardous materials.

3



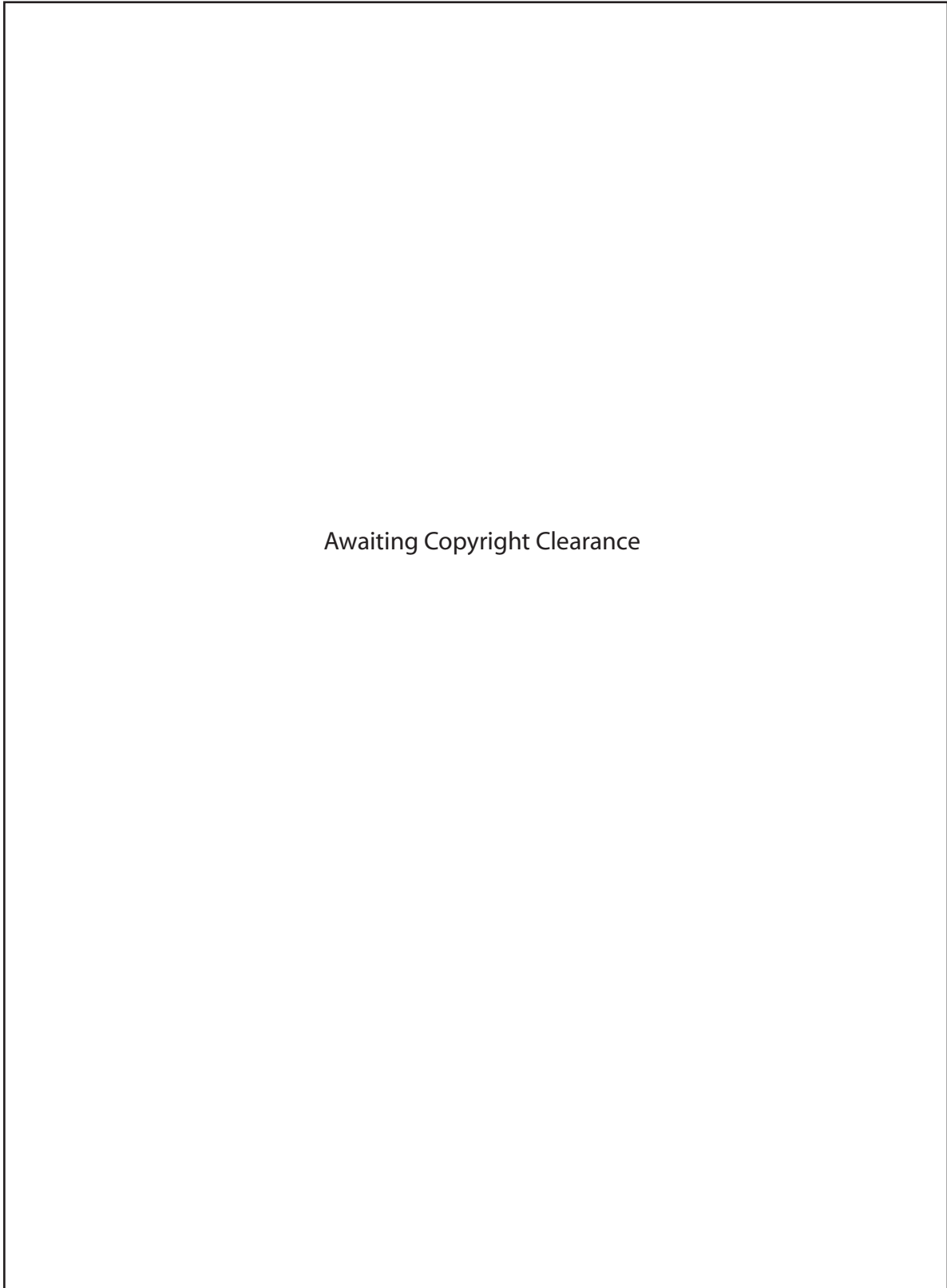
Basic building and construction skills, Pearson Education

Complete the table.

<i>Basic machinery checks</i>	<i>Reason for machinery checks</i>
(1)
(2)
(3)

Question 17 (7 marks)

Use the floor plan to answer part (a).



Question 17 continues on page 11

Question 17 (continued)

- (a) (i) How many door openings are shown on the floor plan? **1**

- (ii) What is the difference in level between the Switch Room and the Open Transformer Yard? **1**

- (iii) Explain the importance of a floor plan when accurately quoting or preparing a materials order from the floor plan shown. **2**

- (b) Complete the table, identifying personnel who would utilise each drawing type, and outline the typical purpose or use of each drawing type. **3**

<i>Drawing type</i>	<i>Personnel</i>	<i>Purpose of drawing type</i>
Floor plan	Concretor	Convey size and formwork details
Drainage diagram		
Section view		
Pictorial sketch		

End of Question 17

Question 18 (7 marks)

- (a) Identify appropriate Personal Protective Equipment (PPE) that is required when operating an electric demolition hammer, and justify your selection. **2**

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- (b) A new electric compressor has been delivered to a construction site. **5**

Describe the procedures to be carried out before it is used on site.

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Centre Number

Section II (continued)

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Student Number

Marks

Question 19 (2 marks)

Complete the table, indicating the most appropriate tool for performing each of the tasks listed.

2

<i>Task</i>	<i>Appropriate tool</i>
Smoothing and finishing wet concrete to a textured finish
Setting out a straight line over a distance of 7 m
Cutting bricks and stone to size and shape	bolster and

Question 20 (5 marks)

Describe the procedure for checking the accuracy of the following levelling devices prior to use.

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Hydrostatic level

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Spirit level

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Dumpy level

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Question 21 (5 marks)

You have been given the responsibility of establishing and maintaining the ‘Chemical Storage Compound’ for dangerous substances on a construction site.

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What routine procedures and emergency procedures would you need to put into place to ensure the safety and wellbeing of all site personnel?

Routine procedures

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Emergency procedures

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Question 22 (3 marks)

Define the role of the Environmental Protection Authority in relation to construction sites, and identify a specific example.

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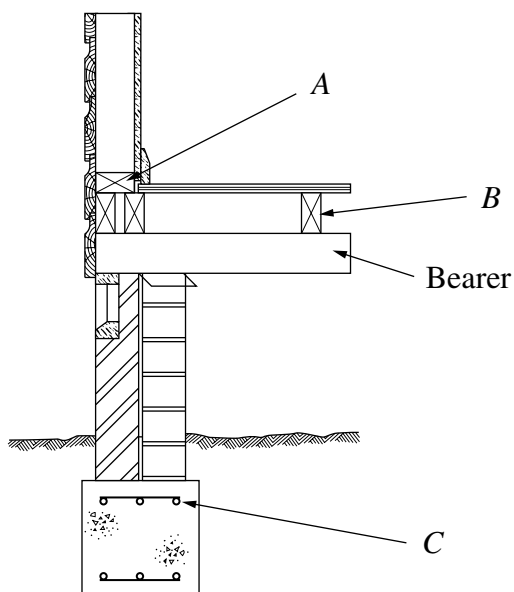
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Question 23 (3 marks)

A sectional view of the external wall of a timber-framed cottage is shown.

3



A component of this drawing is the bearer.

Complete the table, identifying the other THREE components indicated and provide a purpose for each component.

<i>Component</i>	<i>Purpose</i>
Bearer	Load-bearing member that spans between piers
<i>A</i>	
<i>B</i>	
<i>C</i>	

Construction

Section III

30 marks

Attempt TWO questions from Questions 24–26

Allow about 1 hour for this section

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

In your answers you will be assessed on how well you:

- demonstrate relevant knowledge and understanding
 - communicate ideas and information, using precise industry terminology and appropriate workplace examples
 - organise information in a well-reasoned and cohesive response
 - solve proposed issues or problems
-

Question 24 (15 marks)

Please turn over

In your answers you will be assessed on how well you:

- demonstrate relevant knowledge and understanding
 - communicate ideas and information, using precise industry terminology and appropriate workplace examples
 - organise information in a well-reasoned and cohesive response
 - solve proposed issues or problems
-

Question 24 (15 marks)

An old house that has been clad in sheeting containing bonded asbestos is to be demolished.

You have been placed in charge of:

- working with the hazardous material
- site storage
- disposal of the hazardous material and removal from the site.

Discuss, using OHS principles, the issues you would need to consider. Provide examples of the steps you would need to take to deal with these issues.

Question 25 (15 marks)

A small concrete slab is required. The concrete will be mixed on site. Materials have been delivered and are stored in a shed on site.

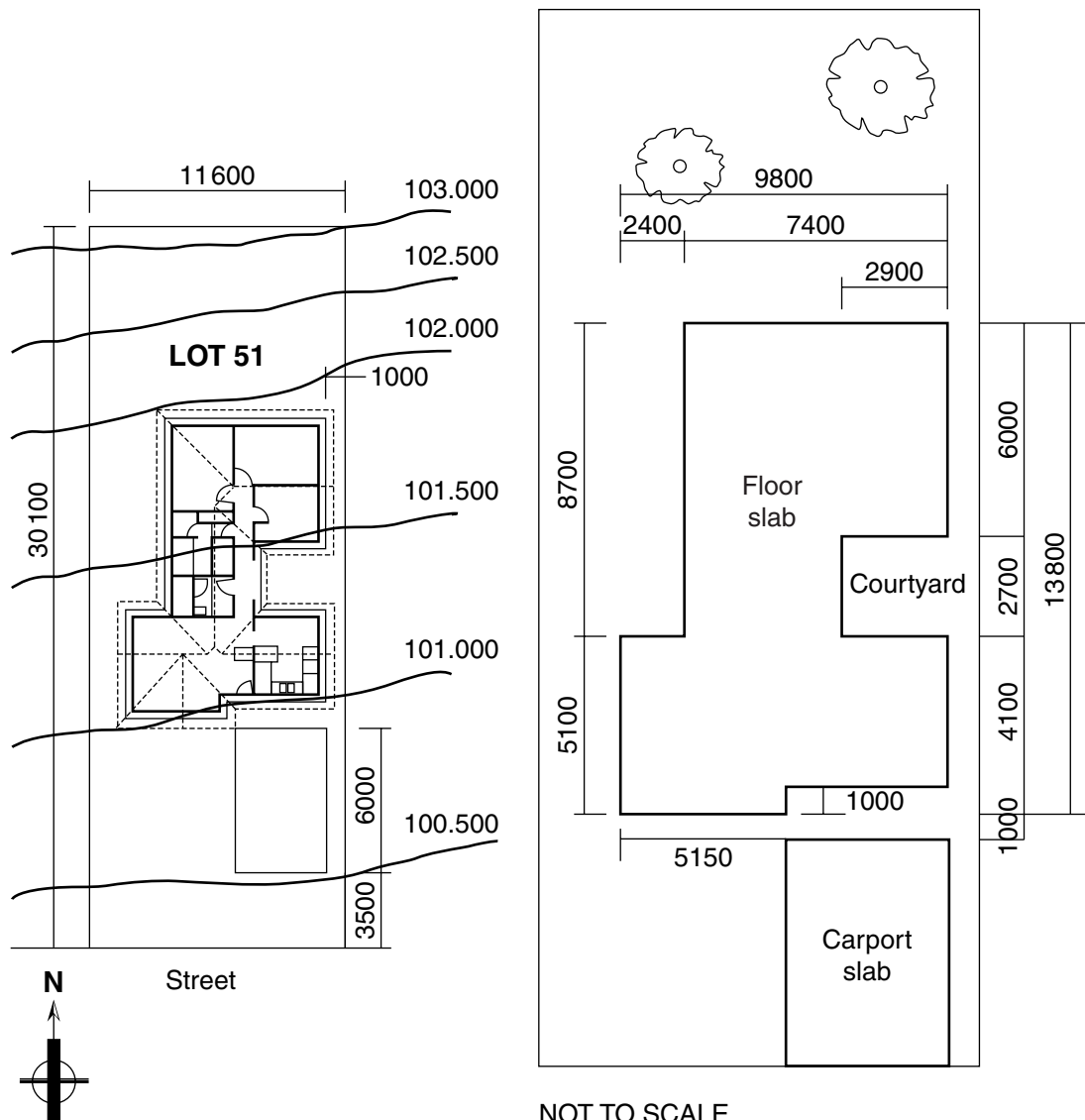
You are to plan and organise the following tasks for the team of workers:

- safety induction
- set up and use a petrol-driven, portable concrete mixer
- clean up site, maintain and store equipment.

Outline these THREE tasks AND discuss the importance of establishing an efficient and safe workplace.

Question 26 (15 marks)

Plans for a brick-veneer house with slab on ground construction are shown.



NOT TO SCALE
Slab thickness = 200 mm

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Discuss the implications of accurate calculation for the builder or concretor.

Calculate the volume of concrete that a builder or concretor would order for the floor slab, including a 5% allowance.

The Local Council has rejected the plans as shown, and has required a set-back of 7.5 metres from the street. Critically evaluate the implications of this for the builder/architect.

End of paper

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