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NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2026

CIVIL TECHNOLOGY: WOODWORKING

MARKS: 200

TIME: 3 hours

This question paper consists of 23 pages, including 7 answer sheets.

REQUIREMENTS:

1. ANSWER BOOK
2. Drawing instruments
3. A non-programmable pocket calculator

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX questions: TWO questions are generic and FOUR questions are subject specific.
2. Answer ALL the questions.
3. Answer each question as a whole. Do NOT separate subsections of questions.
4. Start the answer to EACH question on a NEW page.
5. Do NOT write in the margins of the ANSWER BOOK.
6. You may use sketches to illustrate your answers.
7. Write ALL calculations and answers in the ANSWER BOOK or on the attached ANSWER SHEETS.
8. Use the mark allocation as a guide to the length of your answers.
9. Make drawings and sketches in pencil, fully dimensioned and neatly finished off with descriptive titles and notes to conform to the *SANS/SABS Code of Practice for Building Drawings*.
10. For the purpose of this question paper, the size of a brick should be taken as 220 mm x 110 mm x 75 mm.
11. Use your own discretion where dimensions and/or details have been omitted.
12. Answer QUESTIONS 3.4, 3.5, 4.8, 5.3, 5.4, 6.2 and 6.4 on the attached ANSWER SHEETS using drawing instruments where necessary.
13. Write your NAME on every ANSWER SHEET and hand them in with your ANSWER BOOK, whether you have answered the question or not.
14. Due to electronic transfer, drawings in the question paper are NOT to scale.

QUESTION 1: OHS&A, MATERIALS, TOOLS AND EQUIPMENT (GENERIC))

Start this question on a NEW page.

- 1.1 Choose a description from Column B that matches an item in column A. Write only the letter (A–H) next to the question numbers (1.1.1 to 1.1.5) in the ANSWER BOOK, e.g. 1.1.8 I

COLUMN A		COLUMN B	
1.1.1	Stairways	A	Not to be used in the proximity of electric wires.
1.1.2	Scaffold	B	To cover iron or steel with a layer of zinc to prevent it from rusting.
1.1.3	Powder coating	C	Prevent vertical standards from sinking into the ground.
1.1.4	Safety net	D	Should be provided with toe board to prevent objects from falling off.
1.1.5	Sole plate	E	Allow workers to climb up and down the ladder.
1.1.6	Galvanising	F	Finish is suitable for heavy wear and tear applications.
1.1.7	Rungs	G	Slippery conditions must be corrected.
		H	Prevents falling objects from injuring workers.

(7 x 1) (7)

- 1.2 Describe any TWO safety precautions that must be adhered to when working on a builder's hoist. (2 x 1) (2)
- 1.3 Explain the purpose of painting. (2)
- 1.4 Explain the effect of curing with regard to the strength of concrete. (1)
- 1.5 What is the maximum height of a trestle scaffolding? (1)
- 1.6 Describe TWO aspects that scaffolding must adhere to before it is used? (2 x 1) (2)
- 1.7 Why should non-skid material be fitted at the bottom end of the stiles of a ladder. (1)
- 1.8 Name any ONE method that can be used to prevent corrosion of metals. (1 x 1) (1)

1.9 FIGURE 1.9 below shows a tool that is used in the building construction industry.



FIGURE 1.9

- 1.9.1 Identify tool **A**. (1)
- 1.9.2 How would you care for this piece of equipment if it has been subjected to extreme temperature changes? (1)
- 1.9.3 Explain why the batteries should be removed from the tool if the tool is not going to be used for a long time. (1)
- [20]**

QUESTION 2: GRAPHICS AND JOINING (GENERIC)

Start this question on a NEW page.

2.1 Give the abbreviations for the following:

2.1.1 Natural ground level (1)

2.1.2 Finished floor level (1)

2.1.3 Damp proof course (1)

2.1.4 Toilet (1)

2.1.5 Bathtub (1)

2.2 Identify the electrical symbols that is shown from QUESTIONS 2.2.1 to 2.2.5.

2.2.1  (1)

2.2.2  (1)

2.2.3  (1)

2.2.4  (1)

2.2.5  (1)

2.3 Draw the following material symbols:

2.3.1 Concrete (2)

2.3.2 Face brick (2)

2.3.3 Undisturbed earth (2)

2.3.4 Metal (2)

2.3.5 Plaster (2)

2.4 Name any FIVE details that appear in a site plan. (5 x 1) (5)

2.5 Identify the bolt heads illustrated in figures A to C.

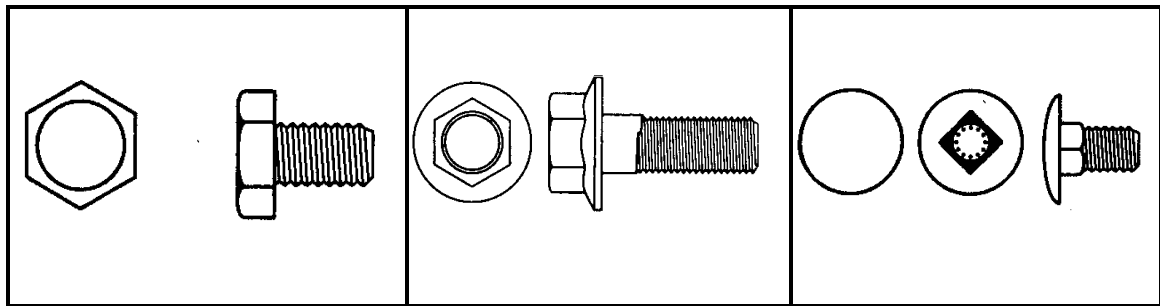


FIGURE A

FIGURE B

FIGURE C

(3 x 1) (3)

2.6 Name any FOUR details that must be mentioned when purchasing bolts. (4 x 1) (4)

2.7 Rawl bolts are expanding sheet anchor fasteners. Briefly explain the operation of rawl bolts. (3 x 1) (3)

2.8 FIGURE 2.8 shows the anchor shield of a rawl bolt in the hole and accessory A placed in position. Answer the following questions regarding the attachment in FIGURE 2.8.

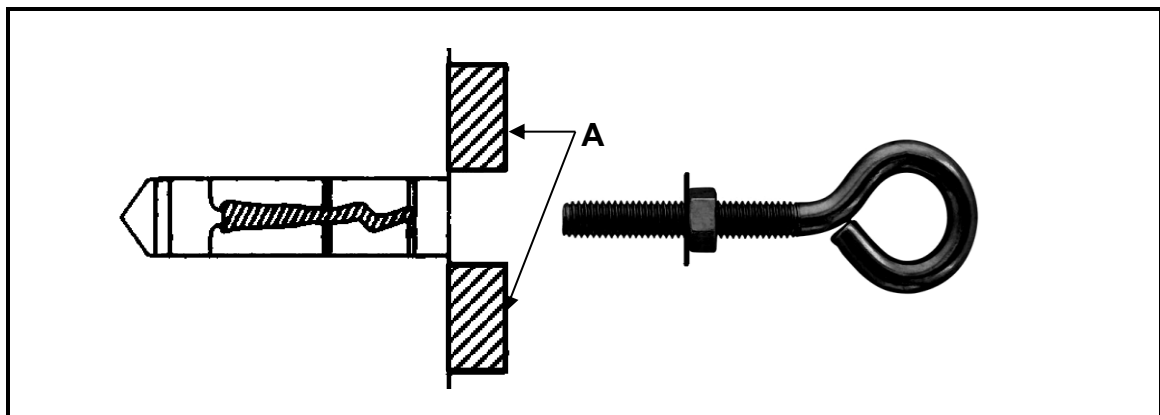


FIGURE 2.8

2.8.1 Briefly explain why the attachment of fixture A will not be effective. (2)

2.8.2 When an eye is used, should the nut or the eye be tightened for the attachment? (1)

2.8.3 Name any TWO good mechanical properties of rawl bolts. (2 x 1) (2)

[40]

TOTAL SECTION A: 60

QUESTION 3: CASEMENTS, CUPBOARDS, WALL-PANELLING AND QUANTITIES (SPECIFIC)

Start this question on a NEW page.

- 3.1 FIGURE 3.1 below shows an external elevation of an incomplete casement. The casement can be extended by placing a new part on top of the existing casement. Study the picture and answer the questions that follow.

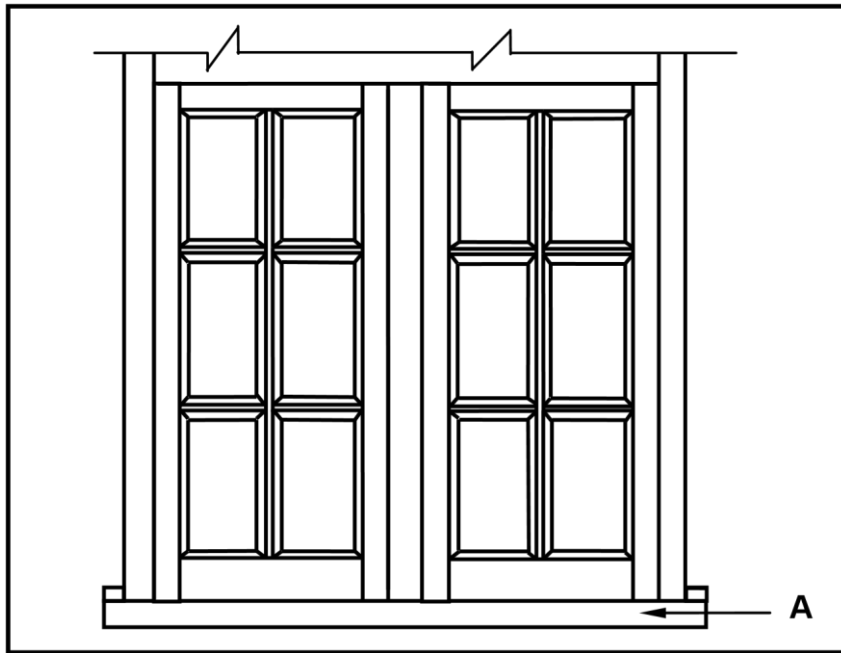


FIGURE 3.1

- 3.1.1 Name the omitted part that can be placed on top of the casement to make it a complete casement. (1)
- 3.1.2 Name the part of the casement that separates the window panes so that they do not touch each other. (1)
- 3.1.3 Recommend ONE other material besides putty, that can be used to secure glass in position. (1)
- 3.1.4 Identify part A. (1)
- 3.2 Give ONE word/term for each of the following descriptions by choosing a word/term from the list below.

cutting list; mullion; muntin; chipboard; tongue and groove board; wall plugs; panel pins; free-standing cupboard; built-in cupboard; rail

- 3.2.1 It is compiled from the working drawings and indicates all the parts of an article that needs to be manufactured. (1)
- 3.2.2 Intermediate vertical member between jambs. (1)
- 3.2.3 They are used to fix horizontal rough grounds to the wall. (1)

3.2.4 It can be moved around to change the appearance of a bedroom. (1)

3.2.5 It is placed on top of the cupboard to fasten the cornice. (1)

3.3 FIGURE 3.3 below shows the front and side elevation of a bedroom cupboard without the doors, fitted from the floor to the ceiling. An incomplete cutting list specifying some parts of the cupboard is given. Study the drawing and complete the cutting list by providing answers to QUESTIONS 3.3.1 to 3.3.6.

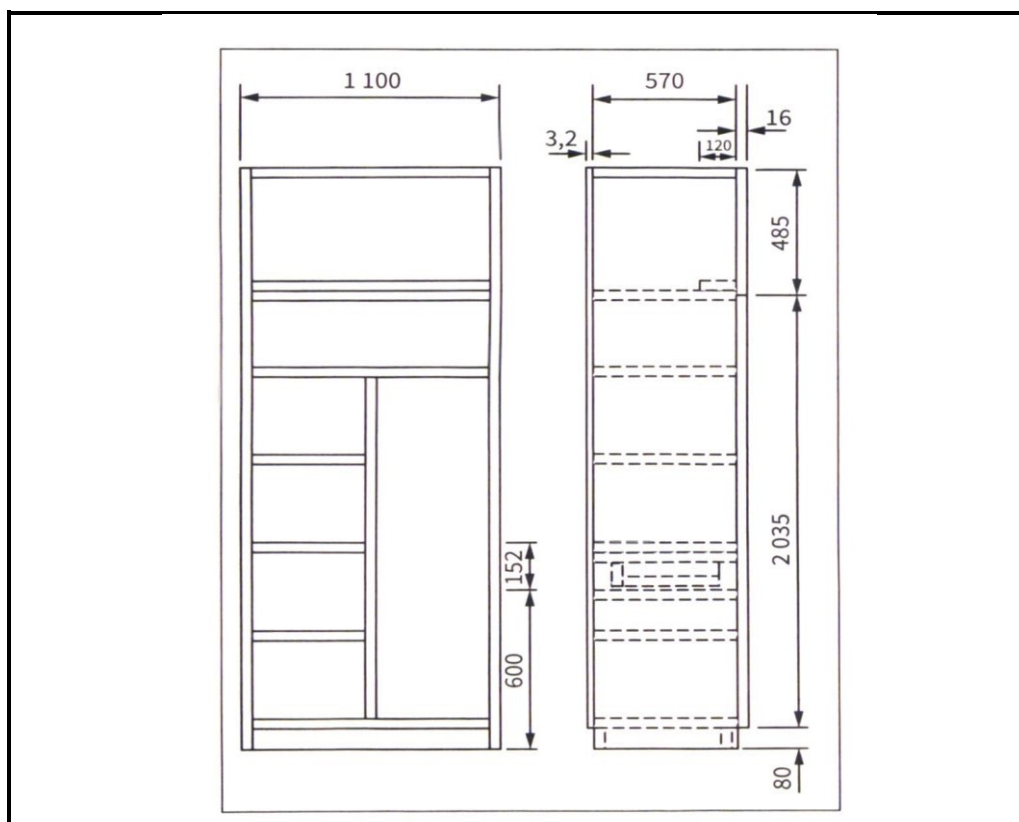


FIGURE 3.3

PARTS	QUANTITY	UNIT	LENGTH	WIDTH	THICKNESS	TOTAL LENGTH	MATERIAL
Sides	2	mm	2 490	570	16	3.3.1	Oak
Rail	1	mm	1 068	120	16	968	Oak
Top of top unit	1	mm	1 068	3.3.2	16	968	Oak
Bottom unit	1	mm	3.3.3	570	16	968	Oak
Shelving	3	mm	570	492	16	3.3.4	Oak
Kick plate	1	mm	1 068	3.3.5	16	968	Oak
Back	1	mm	2 310	1 100	3.3.6	2 310	Oak

(6)

- 3.4 FIGURE 3.4 below shows the front view of a built-in cupboard without the doors. Use ANSWER SHEET 3.4 and draw a vertical sectional view of the cupboard to scale 1 : 10.

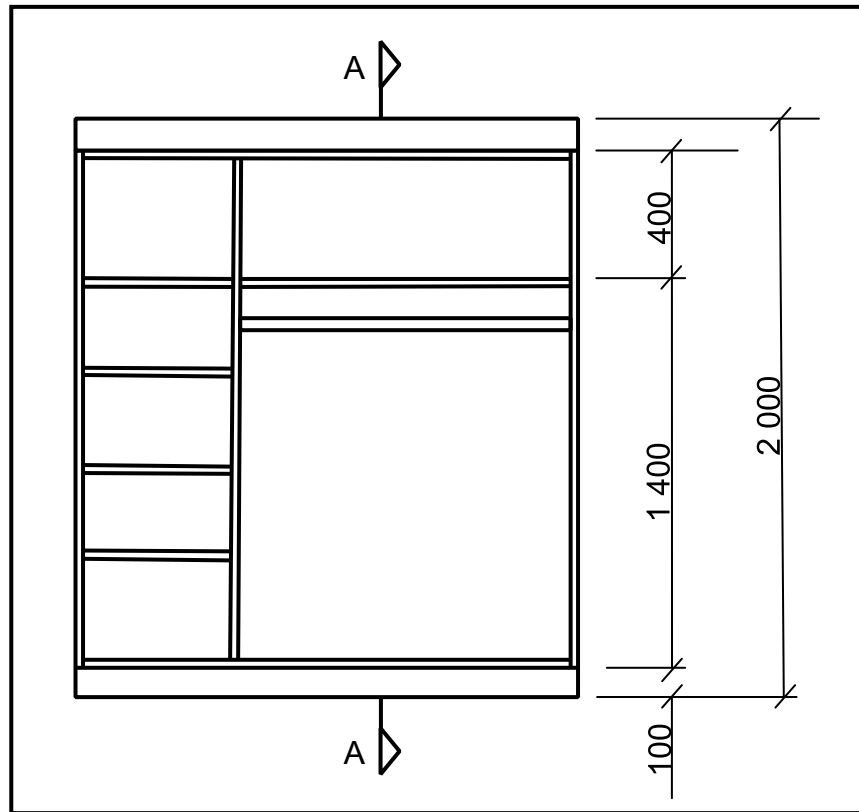


FIGURE 3.4

Use the following specifications:

- All shelves and sides are 16 mm thick.
- The back is 3 mm thick.
- The depth of the cupboard is 570 mm.
- Show hanging rail in sectional view.

(9)

- 3.5 FIGURE 3.5 on ANSWER SHEET 3.5 shows a horizontal section through a part of a wall. Use ANSWER SHEET **B** and draw in good proportion a neat horizontal sectional view to show the joint between two strips of boards.

Label any TWO parts of the drawing.

(6)
[30]

**QUESTION 4: ROOFS, CEILINGS, TOOLS AND EQUIPMENT AND MATERIALS
(SPECIFIC)**

Start this question on a NEW page.

4.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question numbers (4.1.1 to 4.1.5) in the ANSWER BOOK, for example 4.1.6 B.

4.1.1 The South African Bureau for standards compiled specifications to ensure acceptable uniformity in the ... of timber produced by different saw mills

- A quantity
- B factors
- C quality
- D preservation

(1)

4.1.2 ... refers to the ability of timber to resist bending (deflection at a certain load).

- A Density
- B Stiffness
- C Warping
- D Grading

(1)

4.1.3 It refers to the protection and safeguarding of materials in order to ensure a longer service life.

- A Preservation
- B Protection
- C Grading
- D Shrinkage

(1)

4.1.4 It is available in a glossy to matt finish.

- A Lacquer
- B Linseed oil
- C Wax
- D Varnish

(1)

4.1.5 It is the maximum grade that can currently be assigned visually.

- A Grade 4
- B Grade 6
- C Grade 8
- D Grade 10

(1)

4.2 FIGURE 4.2 below shows a woodworking machine.



FIGURE 4.2

- 4.2.1 Identify the machine in FIGURE 4.2. (1)
- 4.2.2 Describe the purpose of V-block when using the machine. (1)
- 4.2.3 Explain the purpose of placing a piece of timber beneath the work piece. (1)
- 4.2.4 List any THREE portable woodworking machines. (3)
- 4.2.5 Describe ONE way of storing portable woodworking machines. (1)
- 4.3 Give ONE word/term for each of the following descriptions. Write only the word/term next to the question numbers (4.3.1 to 4.3.5) in the ANSWER BOOK.
- 4.3.1 It is positioned in the middle of roof truss and determines the height of the truss. (1)
- 4.3.2 The portion of a roof that projects beyond the external walls of a building. (1)
- 4.3.3 Placed and attached perpendicular to the rafter to support metal roofing sheets. (1)
- 4.3.4 Underlay that is used to delay the spread of fire. (1)
- 4.3.5 Galvanised steel plate punched to form a nail pattern. (1)

- 4.4 Describe TWO requirements for the design and construction of roof trusses. (2)
- 4.5 Show by means of pictorial views, the difference between cover strips and metal T-strip used to keep trapdoor of a ceiling in position. Print the title below each pictorial view. (5)
- 4.6 FIGURE 4.6 below shows the top view of a roof layout showing roof trusses and outer walls of L-shaped building. Analyse the illustration and answer the questions that follow.

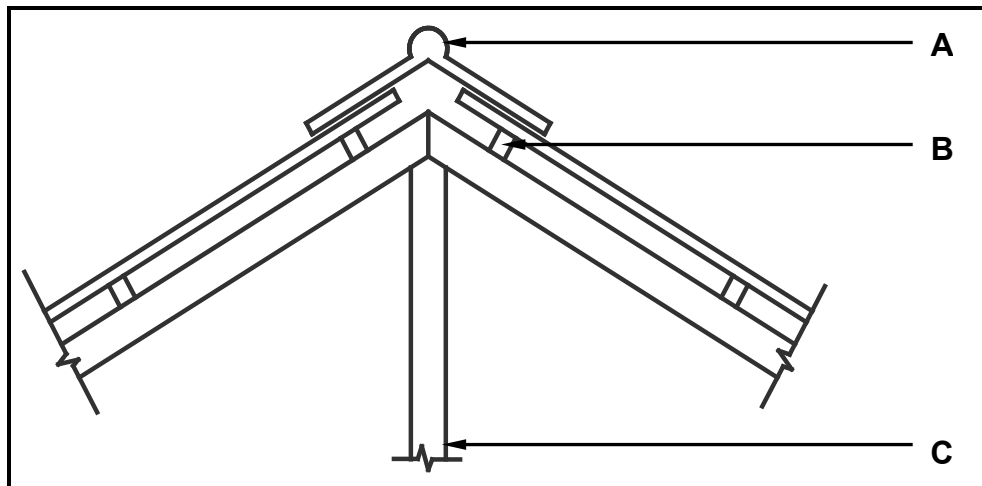


FIGURE 4.6

- 4.6.1 Identify part **A**. (1)
- 4.6.2 Describe the purpose of part labelled **A**. (1)
- 4.6.3 What is the name and standard size of part **B**? (2)
- 4.6.4 What will be the standard size of part **B** be if it is a tile roof? (1)
- 4.6.5 Identify the type of roof covering that is used. (1)
- 4.6.6 What is the maximum centre-to-centre of part **B** if the roof is to be covered by metal roofing sheets. (1)
- 4.7 Describe TWO advantages of a thatched roof. (2)
- 4.8 Use ANSWER SHEET 4.8 and complete the vertical section through the foot of a roof by drawing the closed eaves to scale 1 : 10.
- Show the following on your drawing:
- Fascia board 228 mm x 28 mm
 - Soffit hanger 38 mm x 38 mm
 - 6 mm fibre cement board
 - Two quarter round mouldings below fibre cement board

(7)
[40]

QUESTION 5: CENTERING, FORMWORK, SHORING AND GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)

Start this question on NEW page.

- 5.1 Describe the function of the following components of a dead shore.
- 5.1.1 Needle (1)
- 5.1.2 Sole plate (1)
- 5.2 Differentiate by means of line diagrams between a *couple roof* and *collar tie roof truss* in your ANSWER BOOK. Show the walls as part of your answer and write the title below each drawing. (8)
- 5.3 ANSWER SHEET 5.3 shows an incomplete front elevation of the construction detail of the centring for a semi-circular arch.
Complete the drawing by drawing the omitted members.
- Draw open laggings on the right half and closed laggings on the left half of the centre. (11)
- 5.4 FIGURE 5.4 on ANSWER SHEET C show two walls that must support an in-situ concrete floor.
- Use ANSWER SHEET 5.4 and draw in good proportion a vertical section through formwork for an in-situ cast concrete floor.
- Show the support for the formwork on one side of a supporting wall. (9)
- [30]**

QUESTION 6: SUSPENDED TIMBER FLOORS, STAIRCASES, IRONMONGERY, DOORS AND JOINING (SPECIFIC)

Start this question on a NEW page.

6.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question numbers (6.1.1 to 6.1.5) in the ANSWER BOOK, for example 6.1.6 B.

6.1.1 Vertical member supporting one end of the handrail at the top and bottom of a flight of stairs.

- A Nosing
- B Newel post
- C Riser
- D Pitch line

(1)

6.1.2 These locks are mounted onto the internal surface of the door and are not very secure and are used as temporal locks for doors and gates.

- A Night latch
- B Mortise lock
- C Drawer lock
- D Rim lock

(1)

6.1.3 Suspended timber floors ...

- A can only be used on upper levels
- B can be placed directly on floors.
- C can be used on ground levels and upper levels.
- D do not need any air brick or vents underneath the floor.

(1)

6.1.4 This joint gives neater appearance on the outside edges of the frame members.

- A Stub mortise-and-tenon joint
- B Continuous mortise-and-tenon joint
- C Half lap joint
- D Tongue and groove joint

(1)

6.1.5 The sizes of these doors vary as they are designed to fit into a specific opening.

- A Framed ledged and braced batten doors
- B One panel door
- C Three panel door
- D Four panel door

(1)

6.2 FIGURE 6.2 on ANSWER SHEET D shows the bottom half of the internal elevation of a framed ledged and braced batten door.

Use ANSWER SHEET 6.2 and draw the following:

6.2.1 The brace (1)

6.2.2 Sectional view of section A-A. Draw the sectional view two times bigger than the given view (5)

6.3 FIGURE 6.3 below shows a sketch of a lock. Study the sketch and answer the questions that follow.

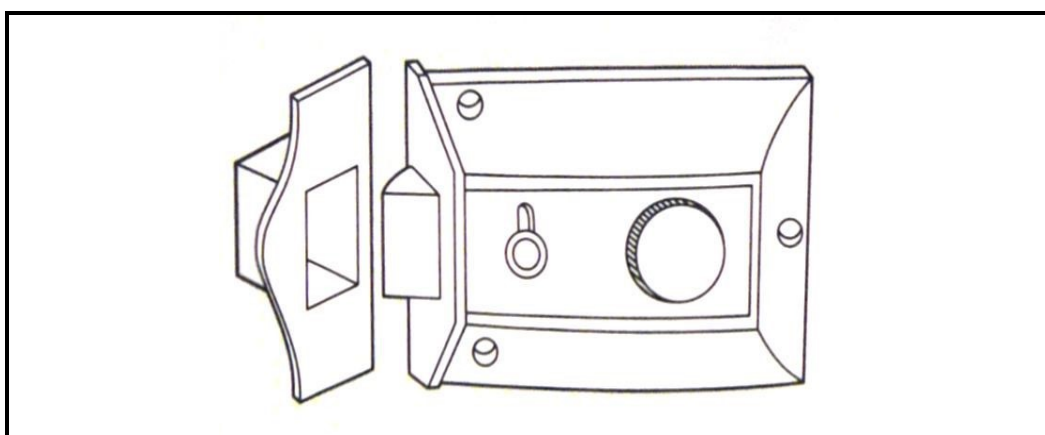


FIGURE 6.3

6.3.1 Identify the lock. (1)

6.3.2 Identify the part of door in which this lock will be fitted. (1)

6.3.3 Explain the advantage of using this lock. (1)

6.3.4 Differentiate between a *key hole* and a *lock*. (2)

6.4 FIGURE 6.4 on ANSWER SHEET 6.4 shows the foundation, NGL and the starting point of the wall of a brick pier. Use ANSWER SHEET 6.4 and draw a neat sketch, in good proportion, of a sectional view of suspended timber floor that is supported by brick piers. (6)

6.5 Briefly motivate why all debris below the floor boards should be removed before the floor boards are fixed. (1)

6.6 Sketch in your ANSWER BOOK in good proportion, the isometric view of only the rail with the tenon for a haunched mortise and tenon joint. (8)

- 6.7 Draw a neat line diagram, in good proportion of a staircase in your ANSWER BOOK.

Show the following on your drawing:

- Landing
- Rise
- Tread
- Newel post
- Handrail

(5)

- 6.8 Explain the purpose of landing in a staircase.

(2)

- 6.9 State the requirements of the National Building Regulations with respect to the following:

6.9.1 The maximum number of stairs in a straight flight of stairs.

(1)

6.9.2 Minimum tread of a step.

(1)

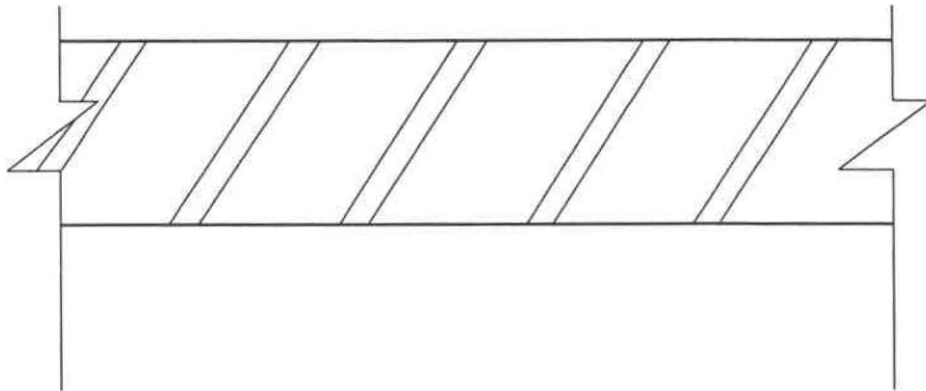
[40]

TOTAL: 200

ANSWER SHEET (3.4)	A	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	

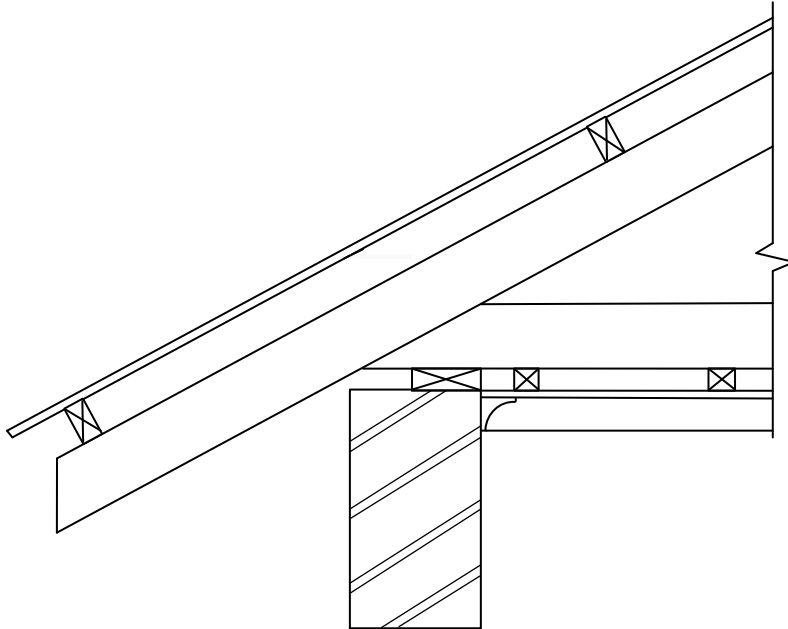
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Members	8	
Application of scale	1	
TOTAL:	9	

ANSWER SHEET (3.5)	B	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



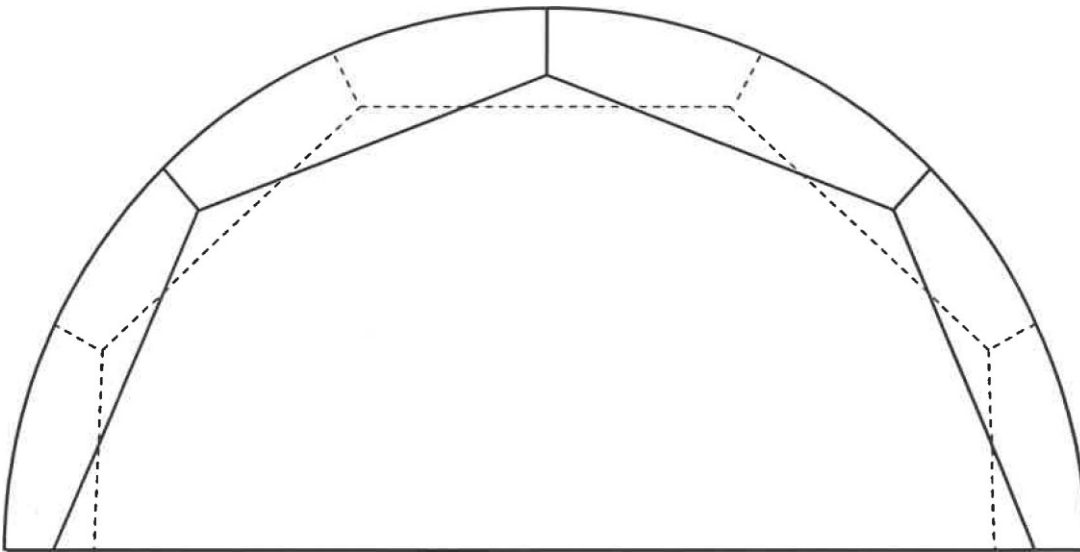
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Members	5	
Correctness of the drawing	1	
TOTAL:	6	

ANSWER SHEET (4.8)	C	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



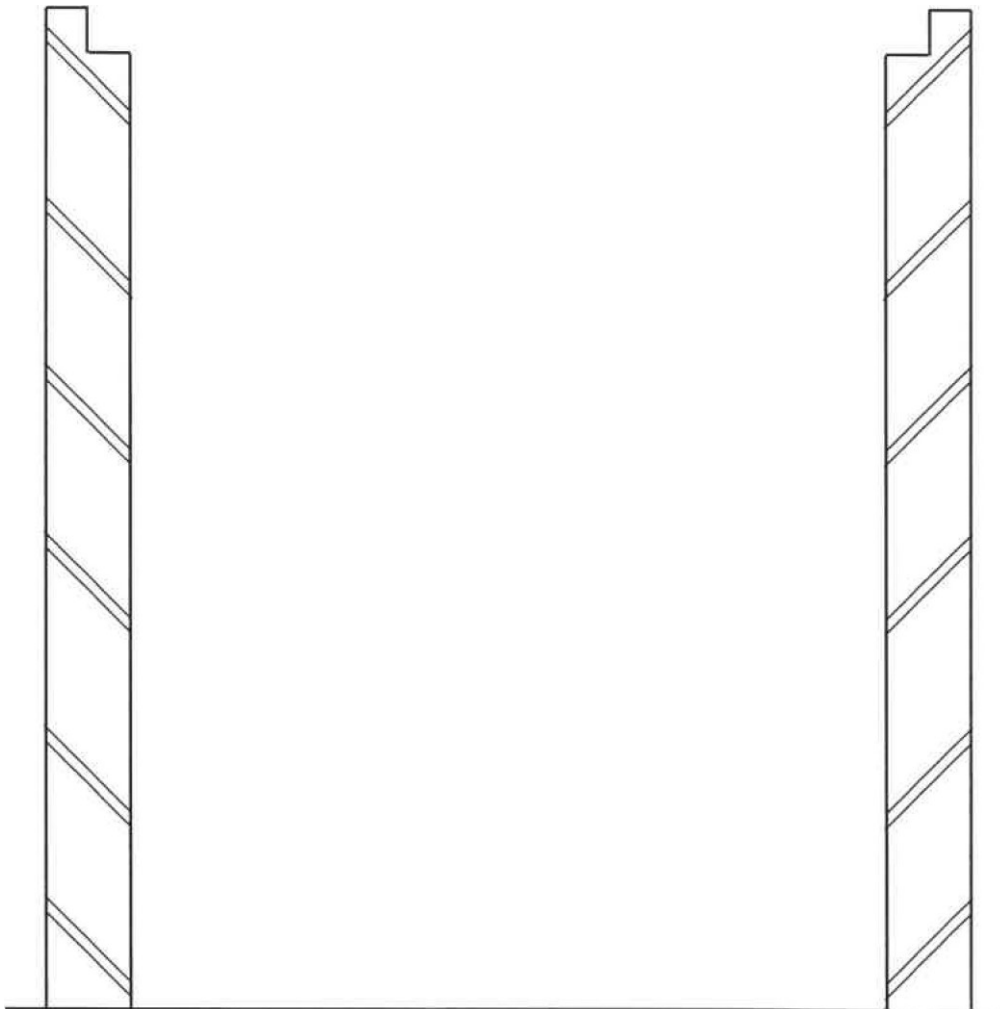
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Members	6	
Correctness of the drawing	1	
TOTAL:	7	

ANSWER SHEET (5.3)	C	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



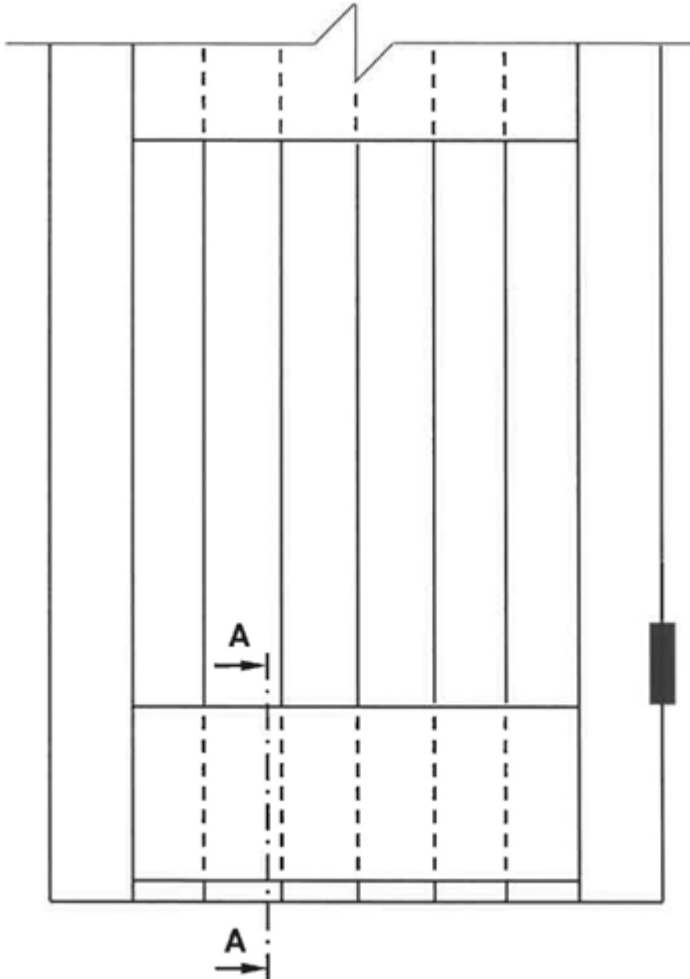
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Members	10	
Correctness of the drawing	1	
TOTAL:	11	

ANSWER SHEET (5.4)	E	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



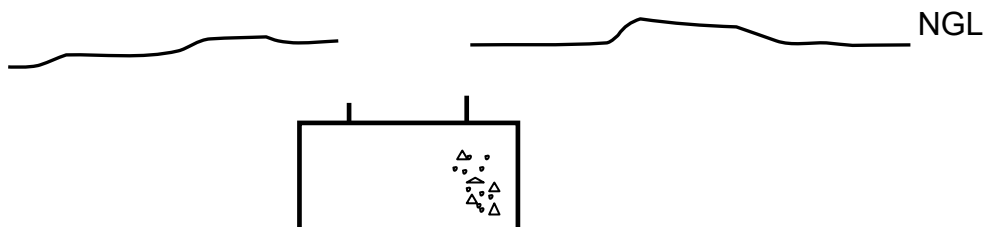
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	1	
Members	8	
TOTAL:	9	

ANSWER SHEET (6.2)	E	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	1	
Members	5	
TOTAL:	6	

ANSWER SHEET (6.4)	E	CIVIL TECHNOLOGY (SPECIFIC)	NAME AND SURNAME:	



DRAWING NOT TO SCALE

ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Correctness of drawing	1	
Members	5	
TOTAL:	6	