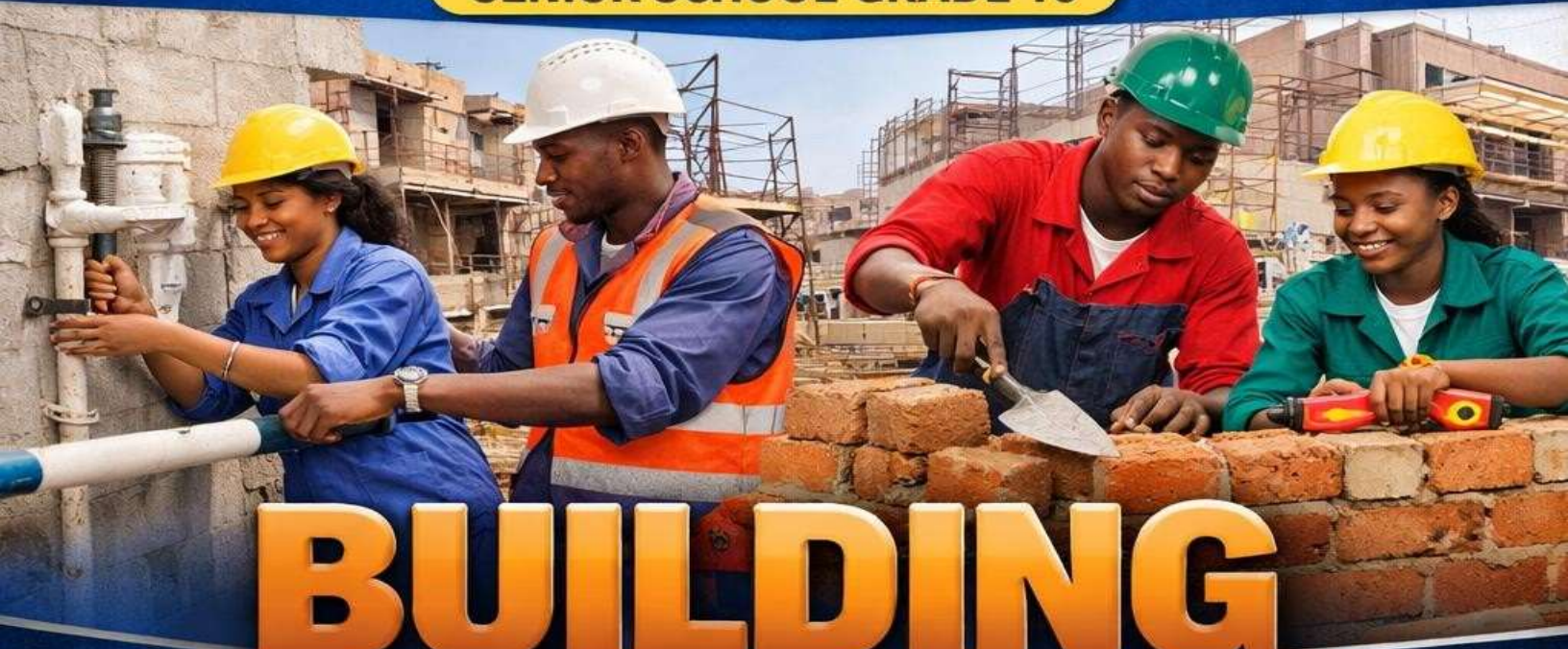


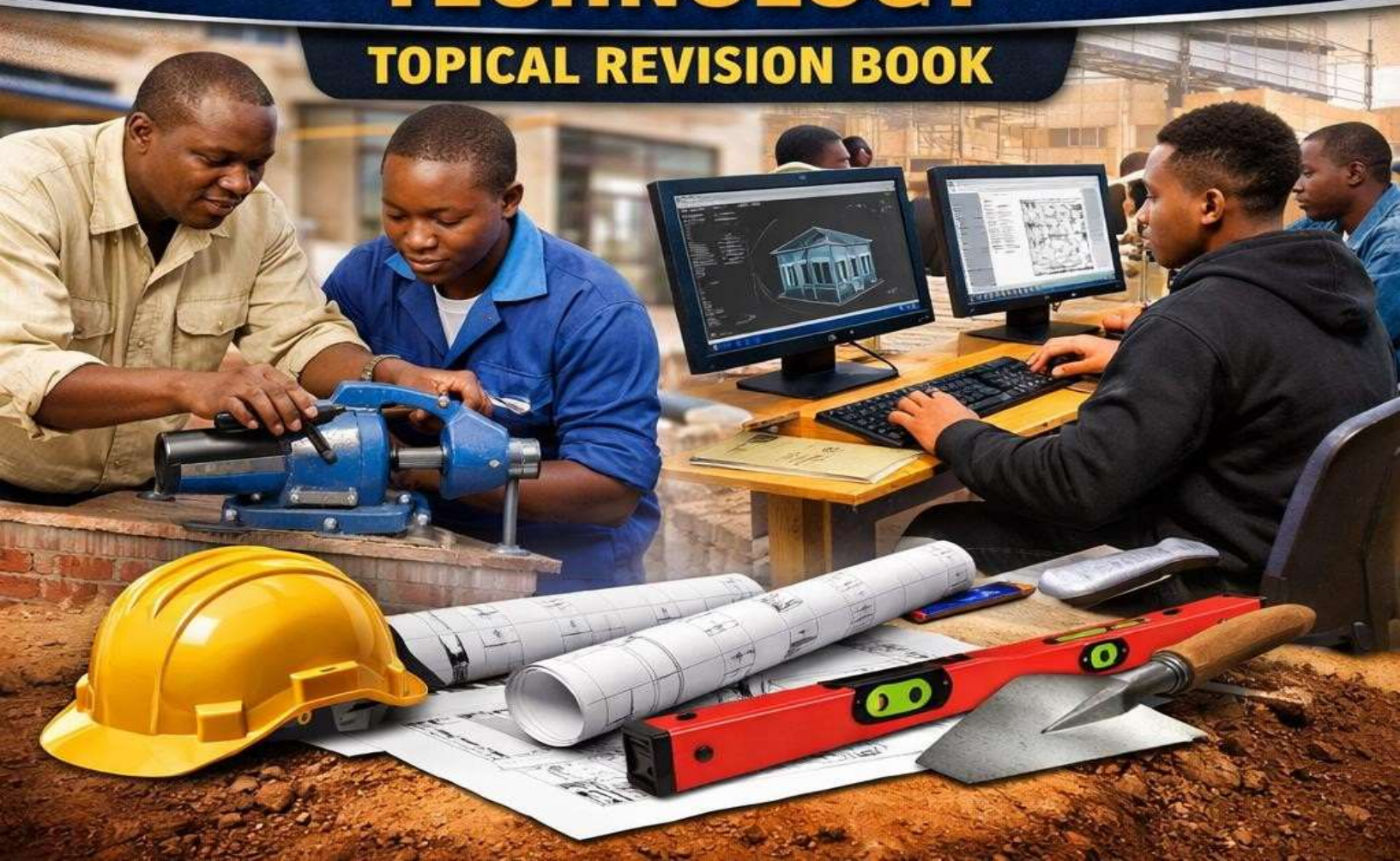
# COMPETENCE BASED EDUCATION

SENIOR SCHOOL GRADE 10



# BUILDING CONSTRUCTION TECHNOLOGY

TOPICAL REVISION BOOK



# ELECTRICAL TOPICAL QUESTIONS

FOR ANSWERS CALL 0743241064

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- ❖ EXAMS

## STRAND 1.0 (FOUNDATION OF BUILDING CONSTRUCTION)

### SUB-STRAND: 1.1 INTRODUCTION TO BUILDING CONSTRUCTION

1. (2 marks)

Define the term **building**.

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2. (4 marks)

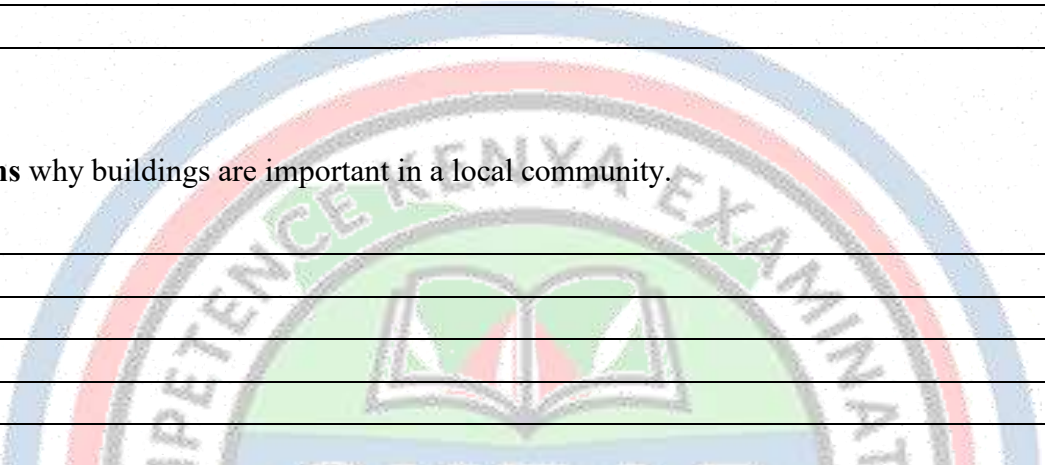
State **four functions** of a building in day-to-day life.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

3. (5 marks)

Explain **five reasons** why buildings are important in a local community.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_



**4. (4 marks)**

List **four basic components** of a building.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**5. (6 marks)**

Describe **how the following components contribute to a building's usefulness**:

a) Roof (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Walls (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Floor (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**6. (3 marks)**

Name **three examples** of residential buildings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**7. (6 marks)**

Buildings can be categorised based on their use.

Give **two examples** for each category:

a) Commercial buildings (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Social buildings (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Residential buildings (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**8. (5 marks)**

Explain the meaning of **architecture**.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**9. (6 marks)**

Describe the development of buildings through ages from:

a) Caves to huts (2 marks)

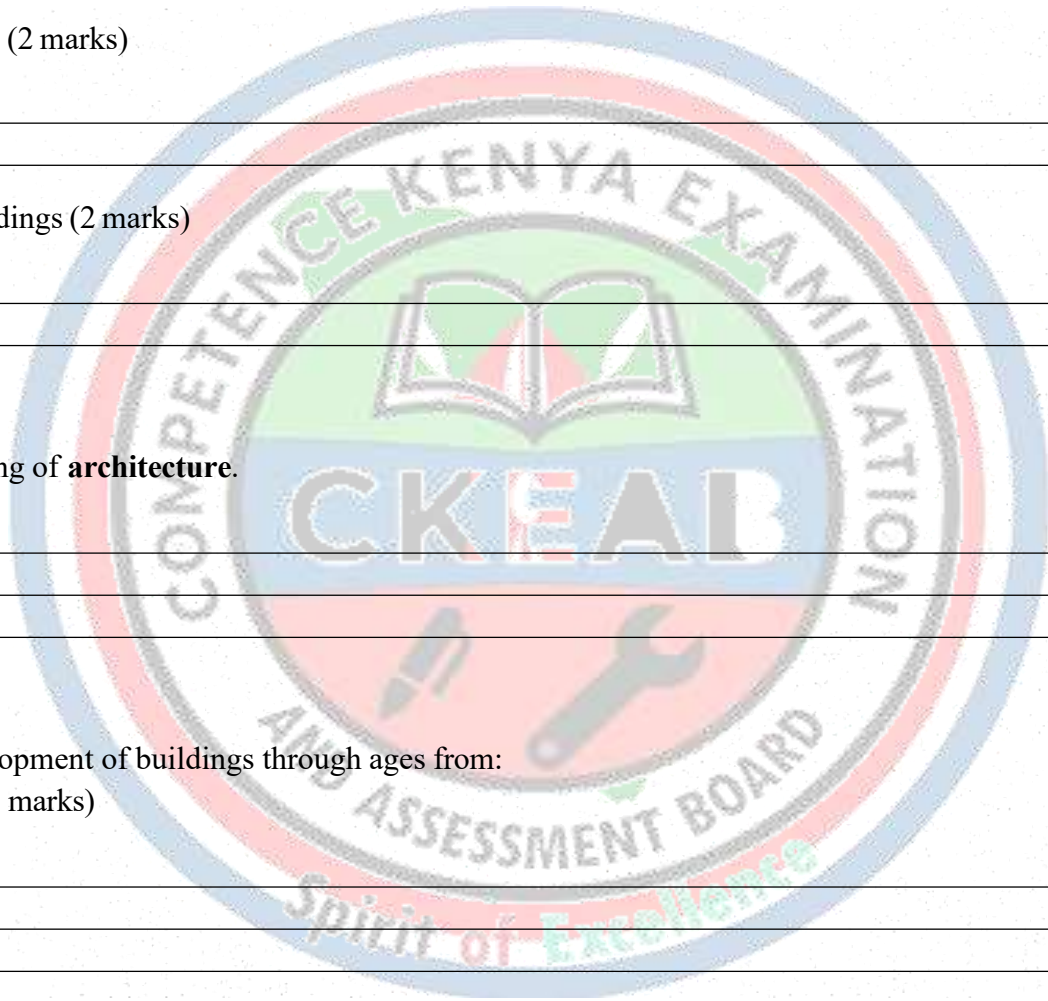
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b) Huts to permanent houses (2 marks)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

c) Permanent houses to modern buildings (2 marks)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



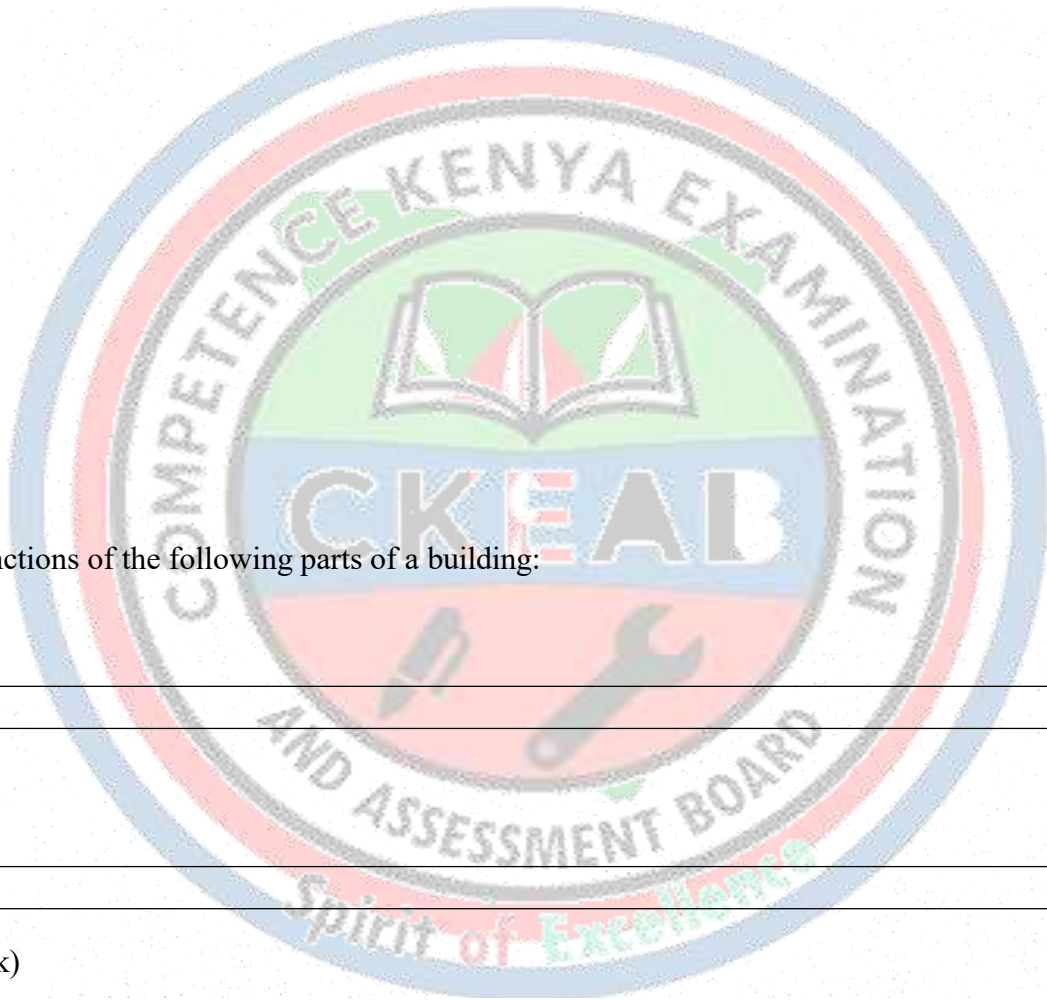
**10. (4 marks)**

State **two characteristics** of traditional buildings and **two characteristics** of modern buildings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**11. (6 marks)**

(a) Draw and name parts of a building (house)



(b) Mention the functions of the following parts of a building:

a) Roof (1 mark)

---

---

b) Wall (1 mark)

---

---

c) Window (1 mark)

---

---

d) Door (1 mark)

---

---

e) Floor (1 mark)

---

---

C) Outline three characteristics of modern buildings (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**12. (4 marks)**

Using the diagram you have drawn above, identify **two components** that provide:

a) Lighting (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Security (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**13. (5 marks)**

Explain **how doors and windows** improve:

a) Ventilation (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Security (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Appearance (1 mark)

\_\_\_\_\_

**14. (4 marks)**

A learner says: *“Buildings are only for shelter.”*

Give **four other functions** of buildings to correct the learner. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**15. (6 marks)**

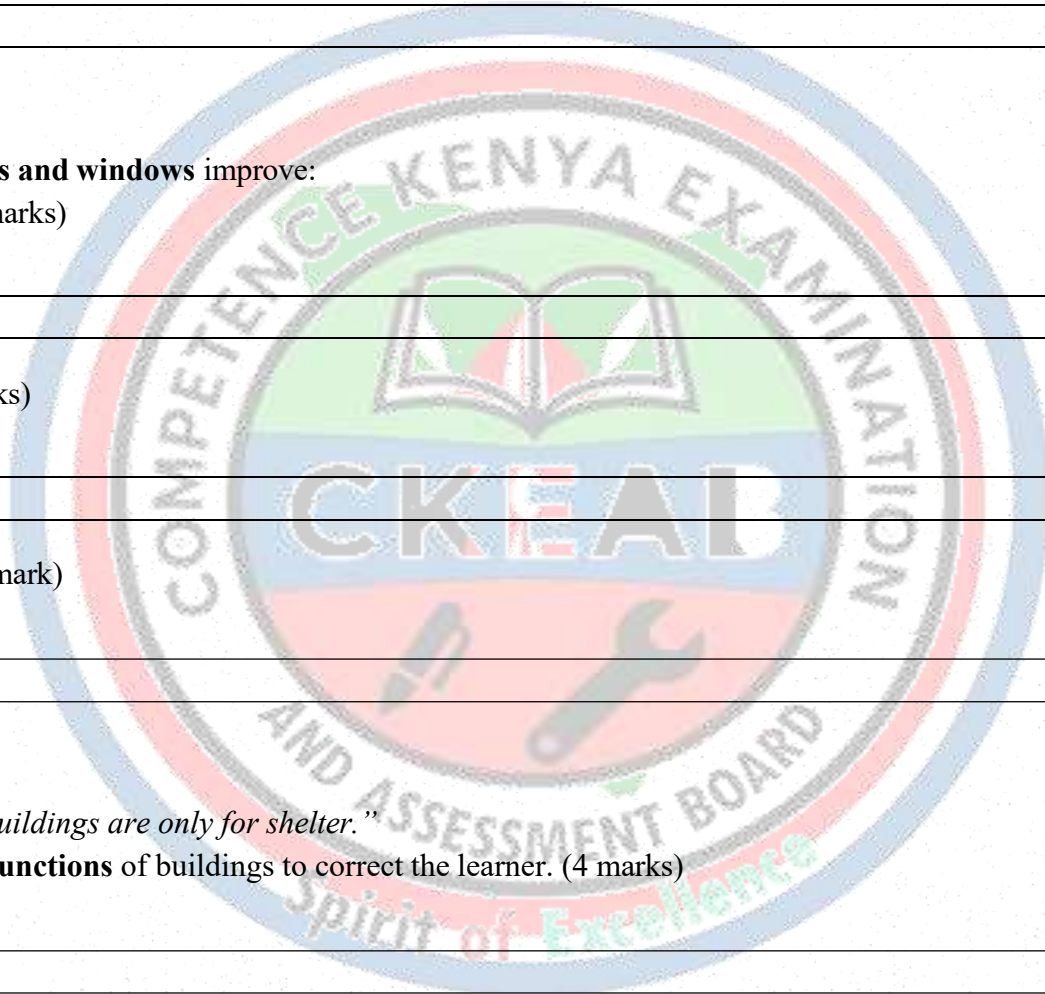
You are a student leader asked to propose a building needed in your locality.

a) Suggest one building type (1 mark)

\_\_\_\_\_

b) State its category (commercial/social/residential) (1 mark)

\_\_\_\_\_



c) Explain **four benefits** it would bring to the community (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**16. (4 marks)**

Differentiate between:

a) Commercial building and social buildings (2 marks)

---

---

---

---

b) Traditional building and Modern building (2 marks)

---

---

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**17. (5 marks)**

Explain **five factors** that may have influenced the change from caves to modern buildings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**18. (3 marks)**

State **three examples of social buildings** found in a locality.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**19. (6 marks)**

A community wants to build a **modern market**.

Explain how each of the following components will help:

a) Roof (2 marks)

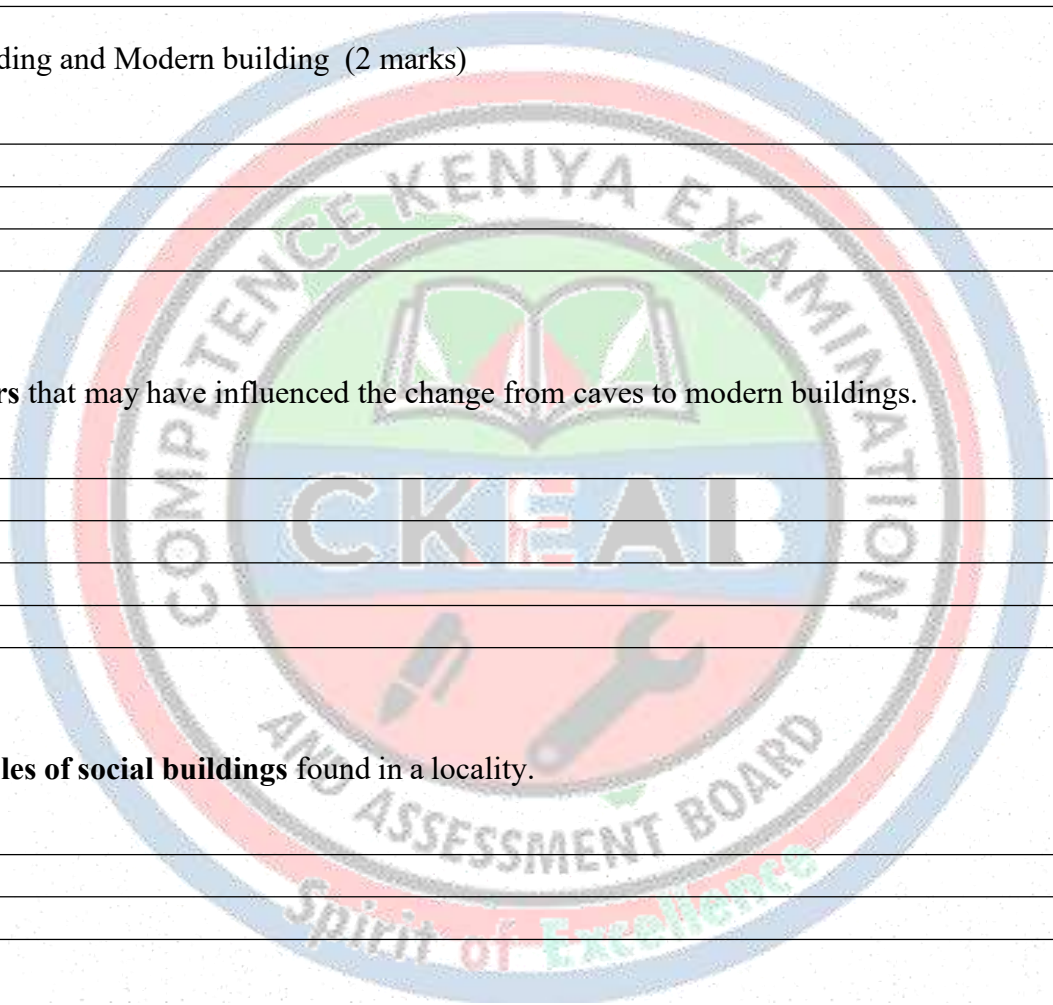
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b) Walls (2 marks)

---

---



c) Doors and windows (2 marks)

---

---

**20. (4 marks)**

State **four uses** of buildings in daily life.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**21. (5 marks)**

During a walk in the locality, you observe many buildings.

(a) State **five things you would check** to classify buildings based on their use.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

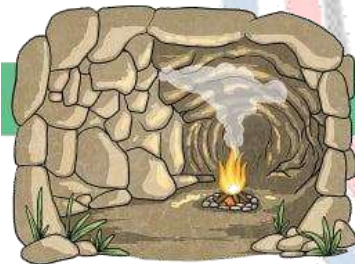
(b) identify these buildings

J

K

L

M



J: \_\_\_\_\_

K: \_\_\_\_\_

L: \_\_\_\_\_

M: \_\_\_\_\_

**22. (6 marks)**

Explain why it is important for a learner of Building Construction Technology to:

a) Observe buildings in the locality (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Categorise buildings based on their use (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

c) Identify examples of materials used in the construction of a building

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**23. (6 marks)**

Complete the table below by giving **one example** of each building type.

Category	Example of Building
Residential	
Commercial	
Social	

(2 marks each = 6 marks)

**24. (5 marks)**

Using examples, explain the functions of:

a) Residential buildings (2 marks)

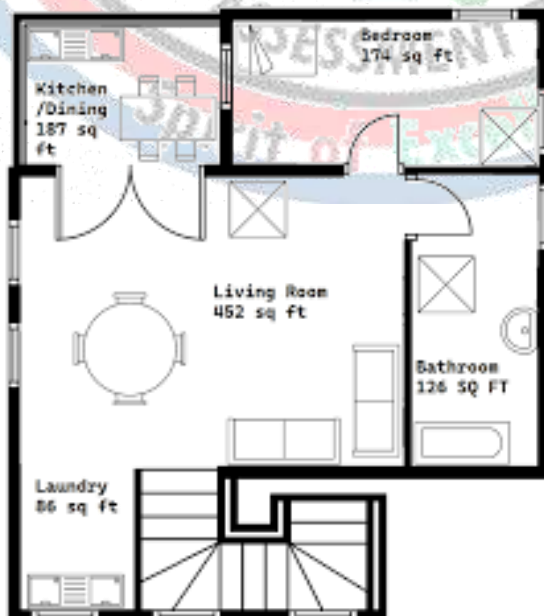
- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Commercial buildings (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**25. (6 marks)**

Study the diagram below.



a) Identify TWO components shown in the plan (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) State TWO uses of a floor plan in building construction (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Explain TWO ways a floor plan helps in planning buildings (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**26. (3 marks)**

Name **three basic parts** of a building that must exist in almost every building.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**27. (5 marks)**

Describe **how the roof protects** a building against:

a) Rain (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Sun/heat (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Wind (1 mark)

- i. \_\_\_\_\_

**28. (6 marks)**

A school wants to build a new classroom block.

a) Classify the building (1 mark)

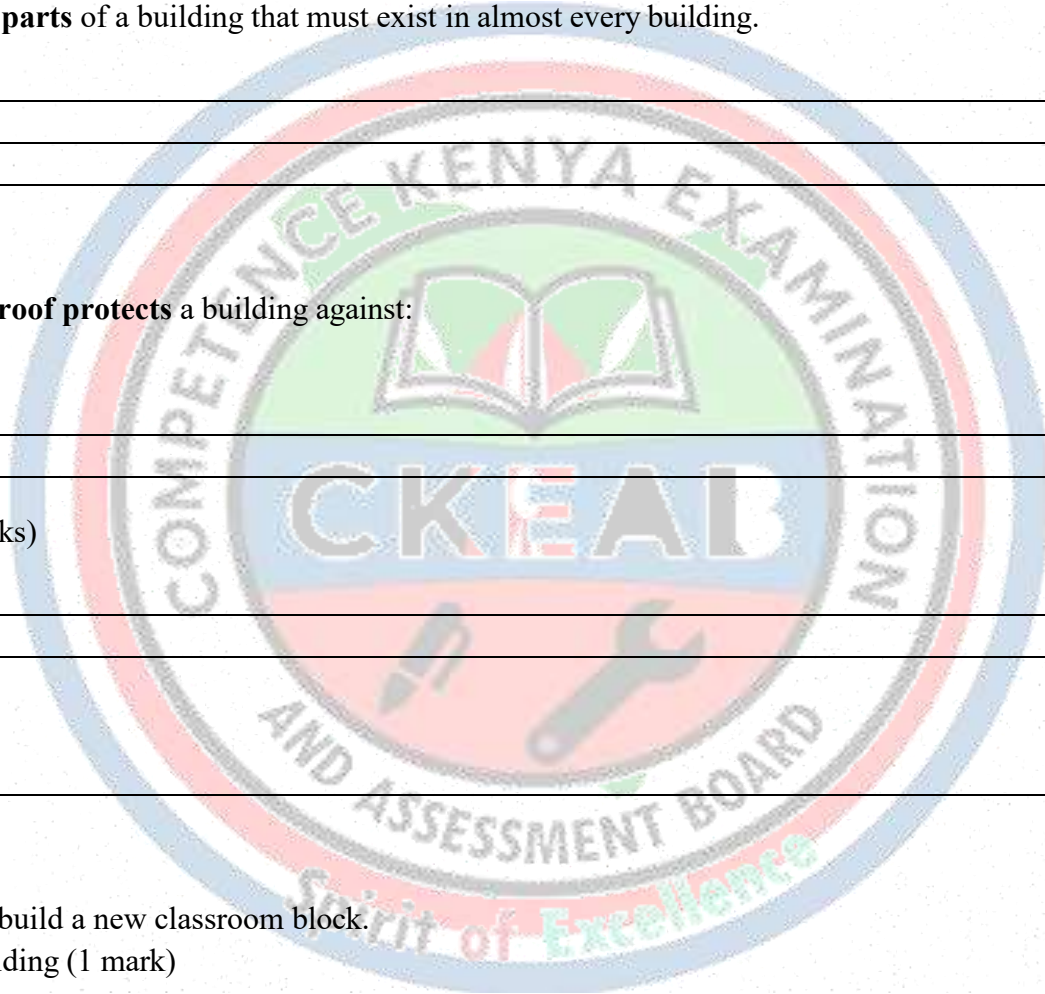
\_\_\_\_\_

b) State THREE functions of the building (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

c) Explain TWO reasons why strong walls are important (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_



**29. (5 marks)**

Explain why modern buildings are considered better than caves in terms of:

a) Comfort (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Safety (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Convenience (1 mark)

\_\_\_\_\_  
\_\_\_\_\_

**30. (5 marks)**

Study the type of a building below



a) Name/type of the building (1 mark)

\_\_\_\_\_

b) Category (commercial/social/residential) (1 mark)

\_\_\_\_\_  
\_\_\_\_\_

c) TWO components visible (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

d) ONE function of the building (1 mark)

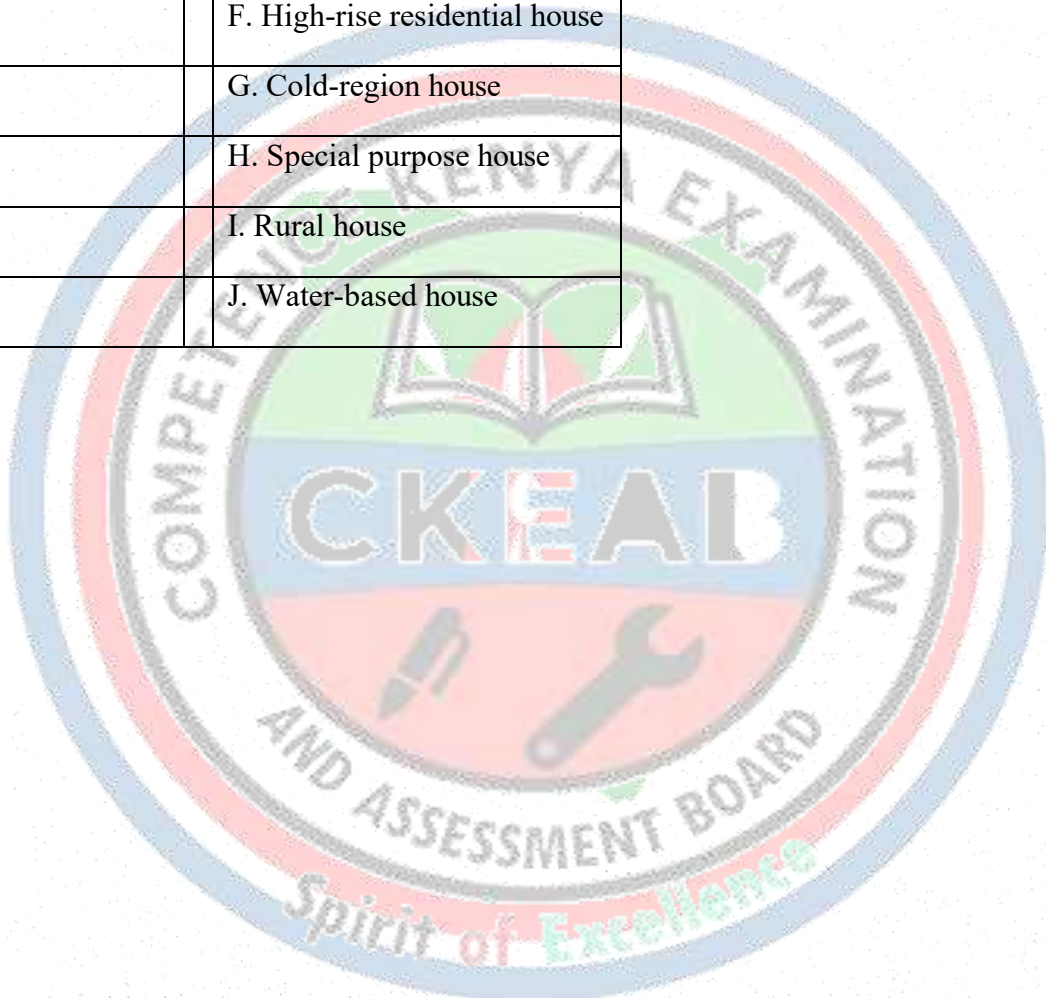
\_\_\_\_\_  
\_\_\_\_\_



31. In a class discussion on housing, learners studied different houses found in Kenya and other parts of the world. They were asked to classify them according to their **housing categories**.

Match the **examples of houses in Column A** with their correct **categories in Column B**.

Column A: Example of House	Column B: Category
1. Manyatta	A. Temporary house
2. Skyscraper apartments	B. Permanent house
3. Mabati house	C. Modern urban house
4. Igloo	D. Traditional house
5. Mud-and-wattle house	E. Semi-permanent house
6. Tent	F. High-rise residential house
7. Stone bungalow	G. Cold-region house
8. Tree house	H. Special purpose house
9. Timber cabin	I. Rural house
10. Floating house	J. Water-based house



**SUB-STRAND 1.2: SITE OF BUILDING CONSTRUCTION PREPARATION**

**SECTION A: QUESTIONS (100 MARKS)**

**1. (2 marks)**

Define the term **site selection**.

---

---

**2. (2 marks)**

Define the term **site clearing**.

---

---

**3. (2 marks)**

Define the term **site levelling**.

---

---

**4. (4 marks)**

State **four factors** to consider when selecting a site for building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**5. (6 marks)**

Explain how each of the following factors affects the selection of a building site:

a) Soil type (2 marks)

---

---

b) Drainage (2 marks)

---

---

c) Accessibility (2 marks)

---

---



6. (3 marks) List three safety measures to observe during site preparation.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

7. (5 marks) A learner is assigned to prepare a construction site. Describe five activities carried out during site preparation.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

8. (4 marks) Name four hand tools used in site clearing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

9. (4 marks) A group of Grade 10 learners is preparing a site for construction. They are required to clear bushes, remove stones, dig, and level the ground before building begins.

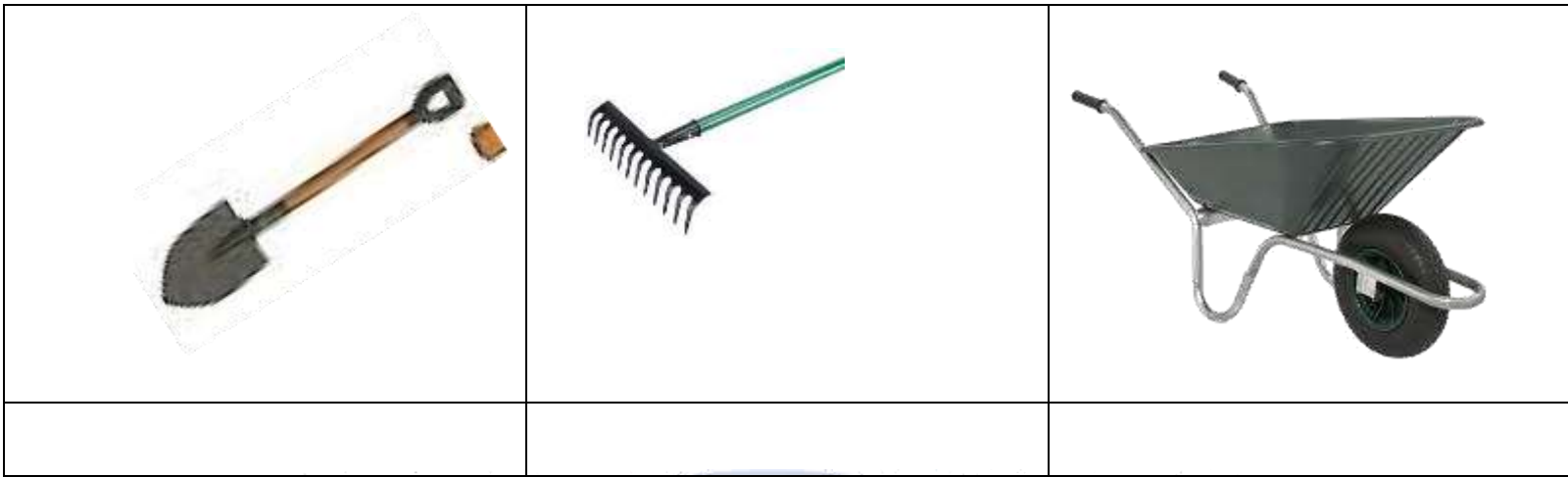
(a) Match the tools in Column A with their correct uses in Column B.

Column A: Tool	Column B: Use
1. Hoe	A. Cutting grass and small bushes
2. Rake	B. Removing tree stumps and roots
3. Spade	C. Digging and lifting soil
4. Panga (Machete)	D. Collecting stones and debris
5. Pickaxe	E. Breaking hard ground and stones
6. Wheelbarrow	F. Transporting soil and materials
7. Shovel	G. Scooping loose soil and sand
8. Axe	H. Cutting down small trees/branches
9. Spirit level	I. Checking whether the ground is level
10. Jembe fork	J. Loosening soil and removing weeds

(b) Name four hand tools used in stripping off topsoil.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

c) Study the tools below, state their names



10. (6 marks)

Differentiate between **site clearing** and **topsoil stripping**.

Your answer should include:

a) Meaning (2 marks)

<b>site clearing</b>	<b>topsoil stripping</b>

b) Tools used (2 marks)

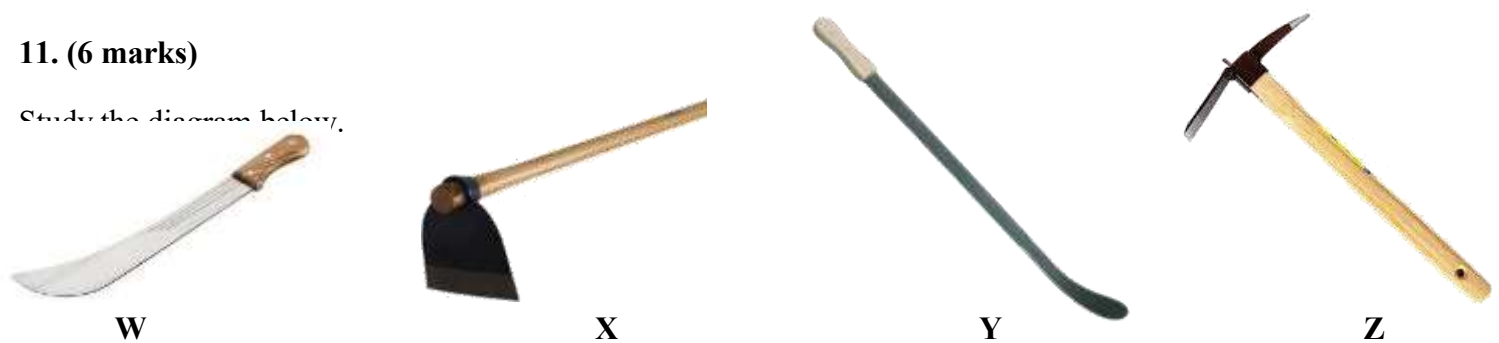
<b>site clearing</b>	<b>topsoil stripping</b>

c) Purpose (2 marks)

<b>site clearing</b>	<b>topsoil stripping</b>

11. (6 marks)

Study the diagram below.



a) Identify tools W, X, Y and Z. (4 marks)

W: \_\_\_\_\_

X: \_\_\_\_\_

Y: \_\_\_\_\_

Z: \_\_\_\_\_

b) State the use use of the tools. (4 mark)

W: \_\_\_\_\_

X: \_\_\_\_\_

Y: \_\_\_\_\_

Z: \_\_\_\_\_

12. (3 marks)

State **three pieces of personal protective equipment (PPE)** used during site clearing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

13. (6 marks)

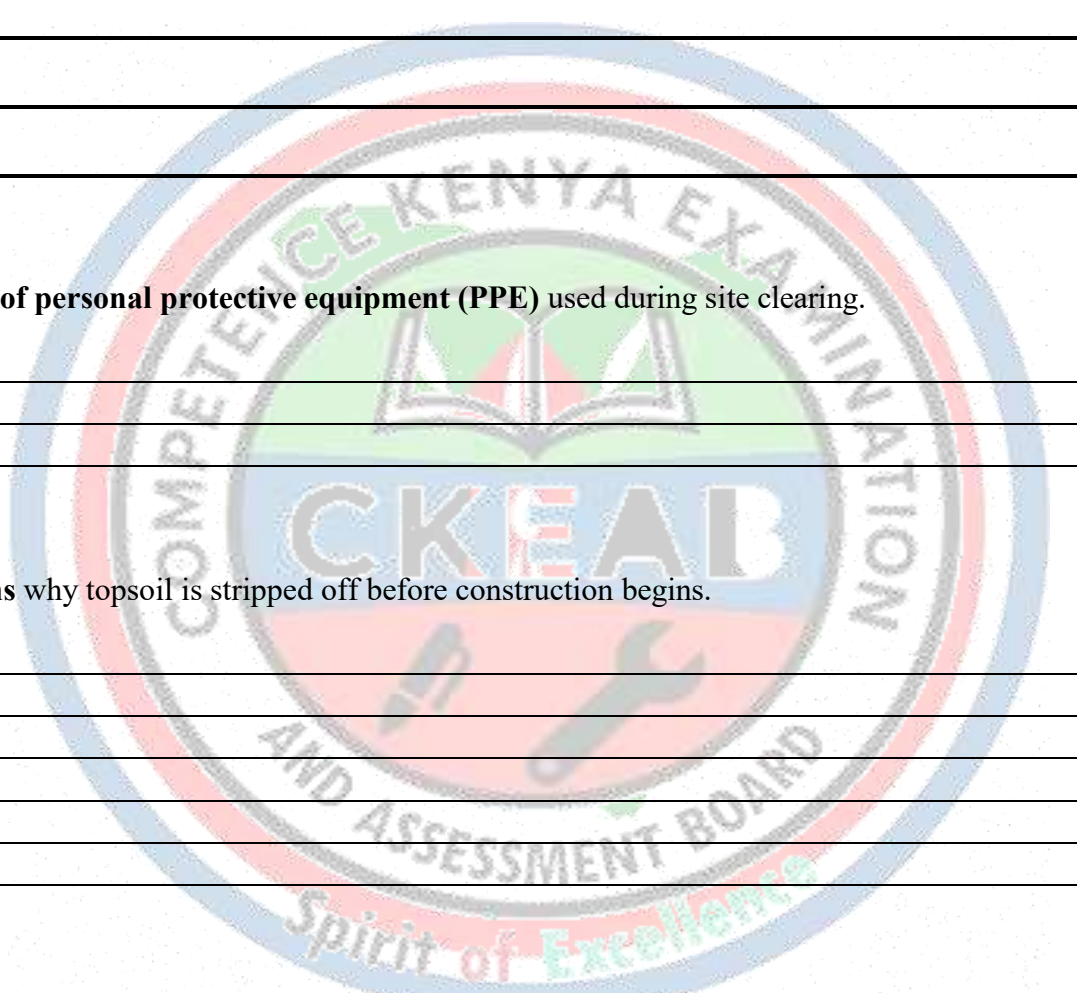
Explain **six reasons** why topsoil is stripped off before construction begins.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

14. (5 marks)

Describe the correct procedure for **clearing a site using hand tools**.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_



**15. (4 marks)**

State **four dangers** that may occur if a site is not properly cleared.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**16. (4 marks)**

State **four reasons** why a building site should be levelled.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**17. (6 marks)**

Describe **three methods** of levelling a site used in building construction.

(2 marks each × 3 = 6 marks)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**18. (6 marks)**

A site has a slope and water collects on one side after rain.

a) Identify the problem likely to affect construction. (2 marks)

\_\_\_\_\_

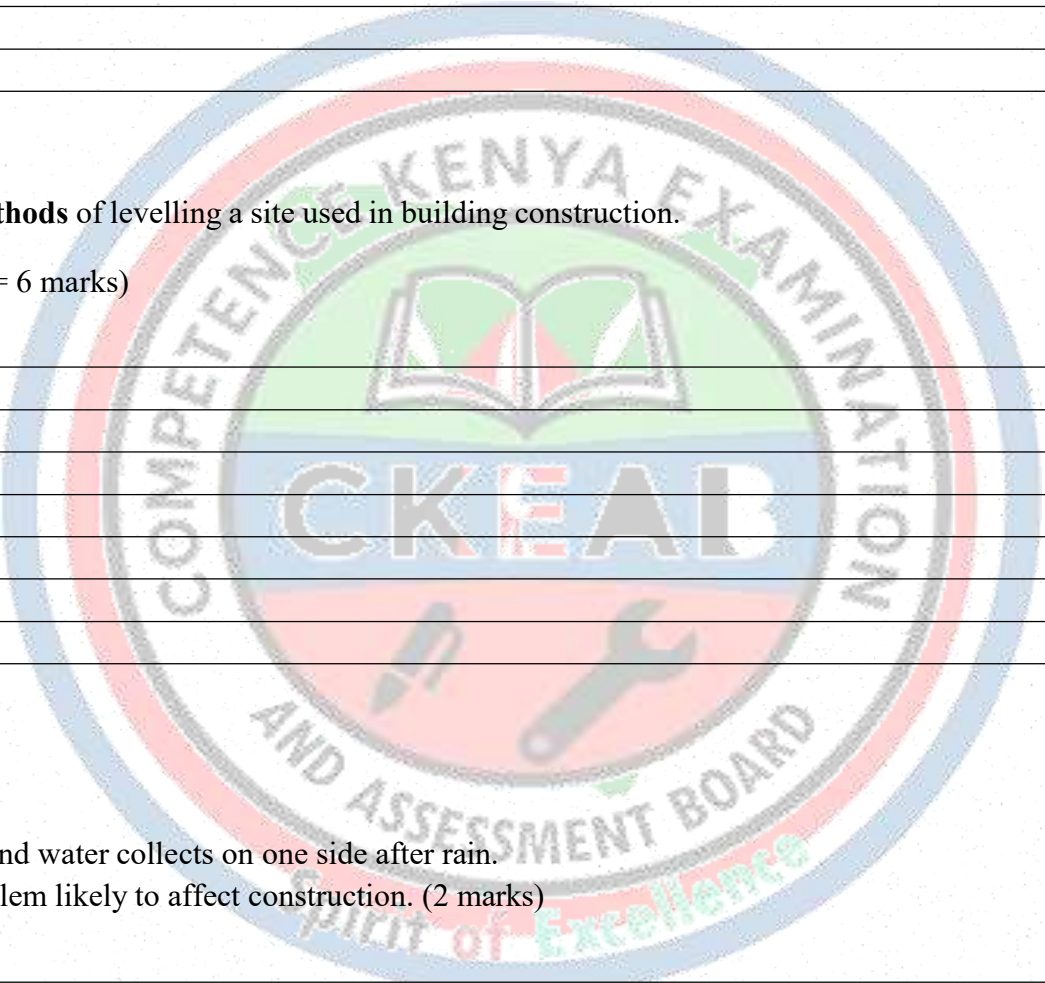
\_\_\_\_\_

b) Suggest **TWO** levelling solutions. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

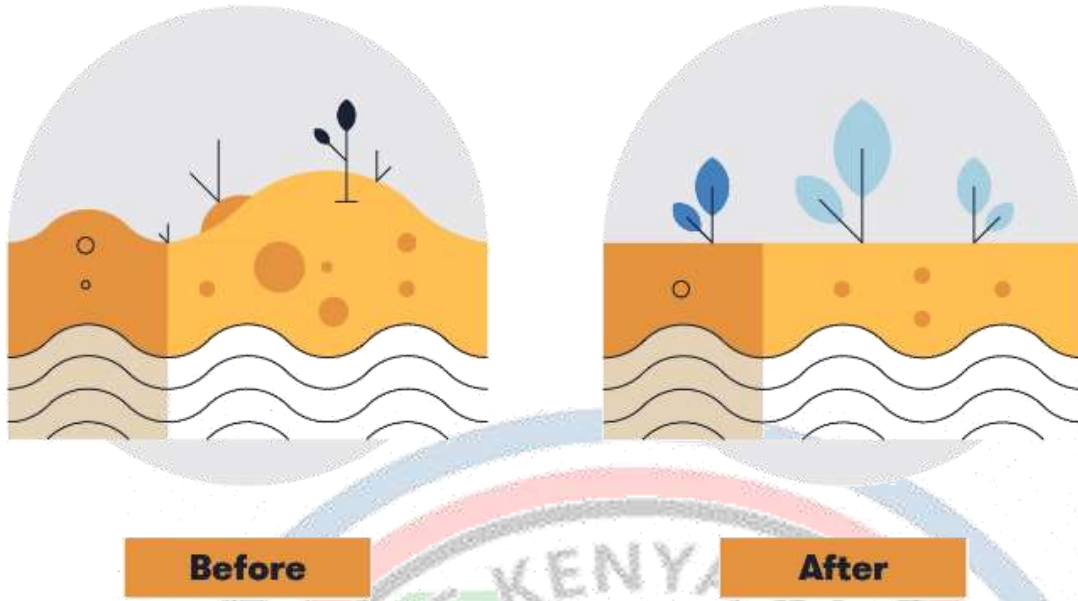
c) Explain why proper drainage is important in that site. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_



**19. (6 marks)**

Study the diagram below showing a sloping site.



a) Name the process shown in the diagram. (1 mark)

\_\_\_\_\_

b) Explain TWO ways levelling improves building stability. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) State ONE danger of constructing on the “before levelling” surface. (1 mark)

\_\_\_\_\_  
\_\_\_\_\_

**20. (4 marks)**

Explain **four safety precautions** to follow when levelling a building site.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**21. (4 marks)**

State **four designated zones** for disposal of building waste materials.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**22. (6 marks)**

Explain how each of the following zones helps in proper waste management:

a) Recycling plants (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Landfills (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Incinerators (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**23. (4 marks)**

State **four examples** of waste materials commonly produced during site preparation.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**24. (6 marks)**

Explain **six dangers** of dumping building waste in undesignated zones such as:

a. Road reserves

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b. Foot paths

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

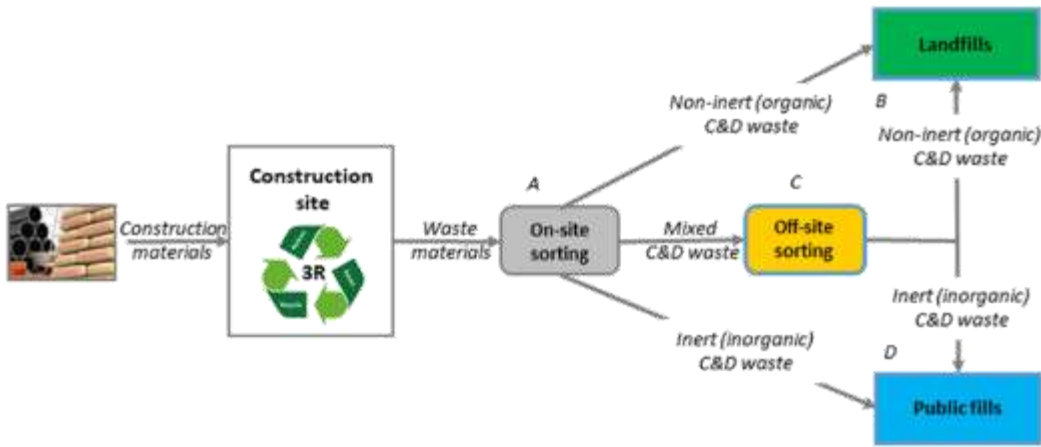
c. Water sources

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**25. (6 marks)**

Study the diagram below.





a) State the importance of sorting waste before disposal. (2 marks)

---



---

b) Give ONE example of waste that can go to recycling. (1 mark)

---



---

c) Give ONE example of waste that can go to landfill. (1 mark)

---



---

d) Give ONE example of waste that can go to incinerator. (1 mark)

---



---

e) State ONE benefit of recycling building waste. (1 mark)

---



---

**26. (4 marks)**

Explain **four ways** dumping building waste on road reserves may cause road accidents.

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---

**27. (4 marks)**

State **four tools** used for transporting waste materials from a construction site.

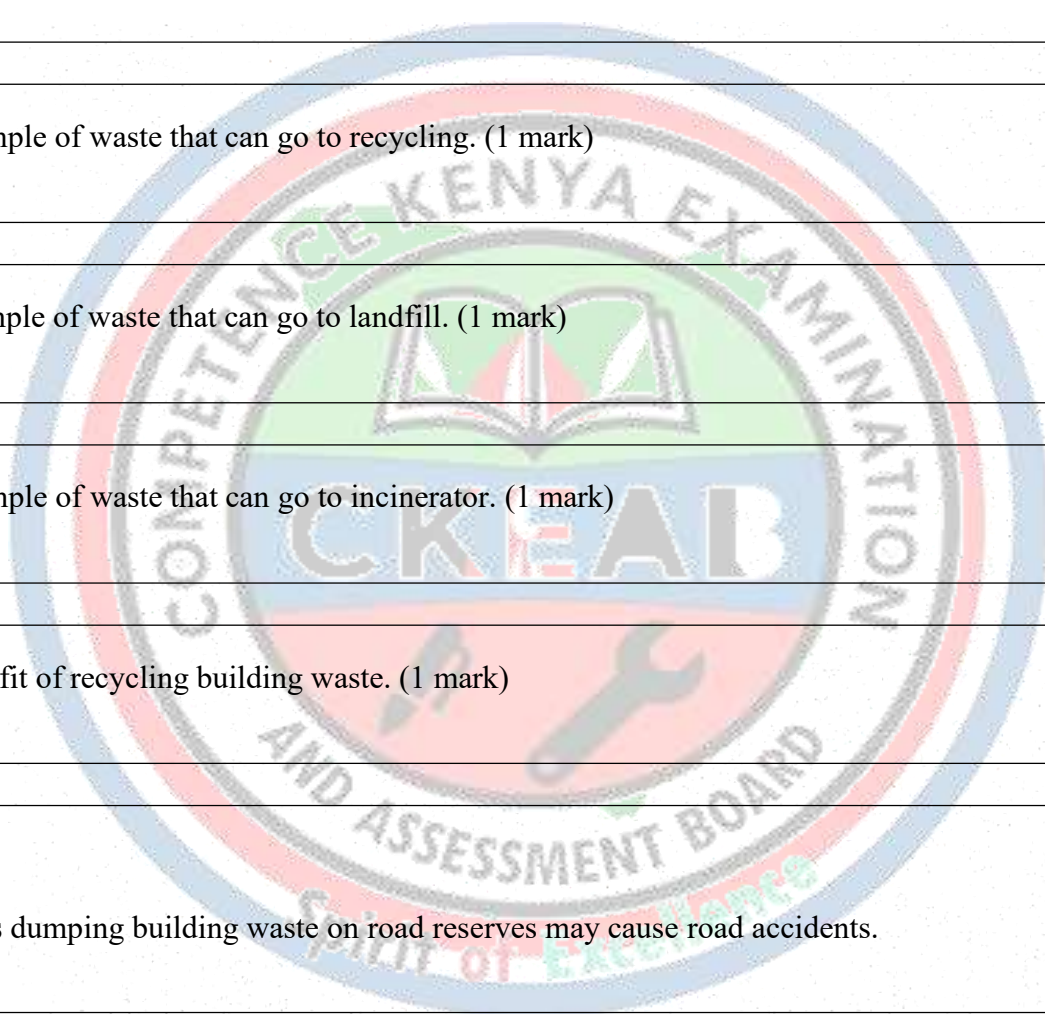
- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---



**28. (6 marks)**

A client wants to build a house near a river.

Using building site selection principles, advise the client on:

a) TWO risks of selecting that site (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) TWO safety measures to reduce the risks (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) TWO alternative site considerations (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**29. (6 marks)**

A school plans to construct a new workshop.

Suggest and justify the best site using the following factors:

a) Accessibility (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Safety of learners (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Drainage and soil stability (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**30. (6 marks) Proper site selection and preparation should be done before any building construction begins.**

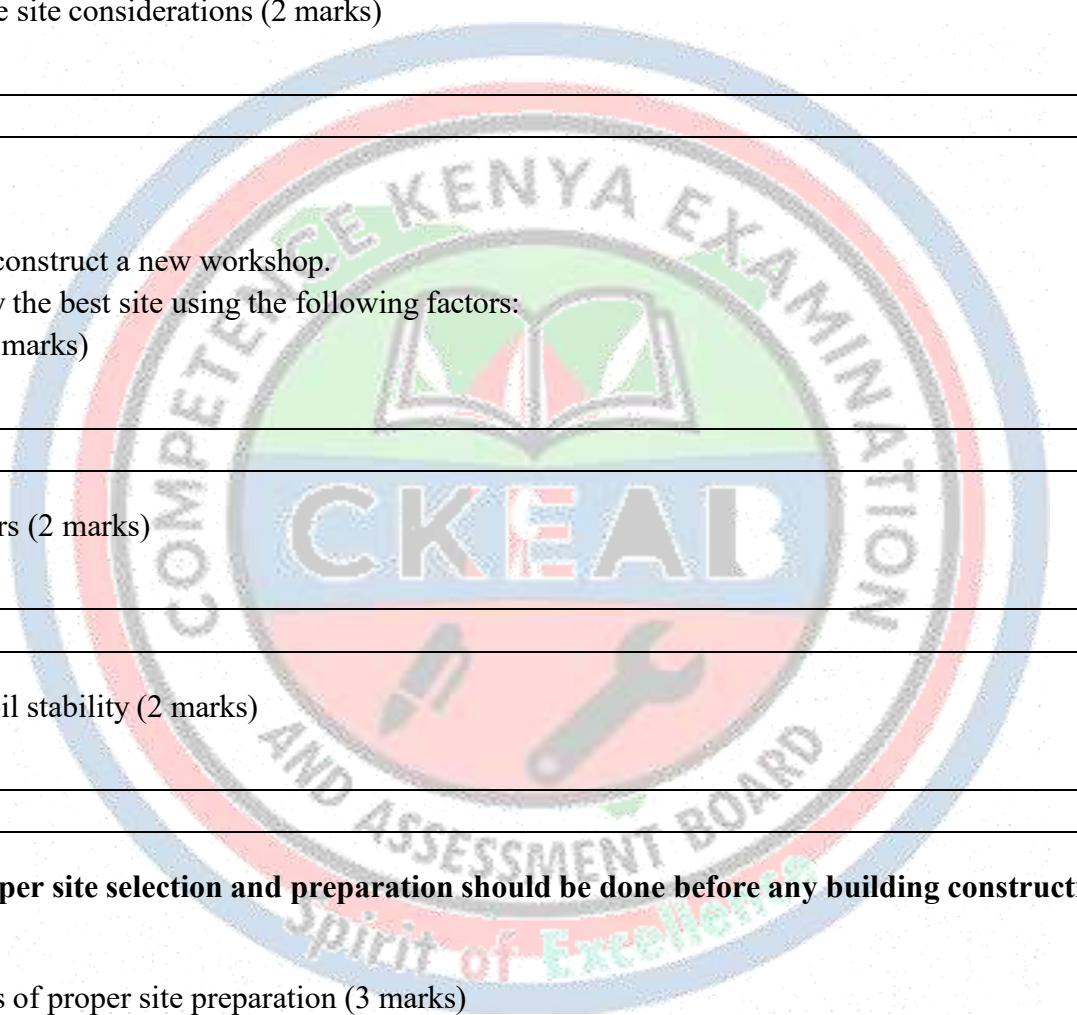
Mention

a) THREE benefits of proper site preparation (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) THREE consequences of ignoring site preparation (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



**STRAND 2.0: RELATED DRAWING**

**SUB-STRAND 2.1: ISOMETRIC DRAWING**

**1. (2 marks)**

Define the term **isometric drawing**.

---

---

**2. (2 marks)**

State **two uses** of isometric drawing in building construction.

- i. 

---
- ii. 

---

**3. (3 marks)**

State **three characteristics** of isometric drawings.

- i. 

---
- ii. 

---
- iii. 

---

**4. (3 marks)**

Name **three drawing instruments** used when producing isometric drawings.

- i. 

---
- ii. 

---
- iii. 

---

**5. (4 marks)**

Explain the meaning of the following terms as used in isometric drawing:

a) Isometric axis (2 marks)

---

---

b) Isometric scale (2 marks)

---

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**6. (4 marks)**

Outline **four steps** followed when drawing a shaped block in isometric projection.

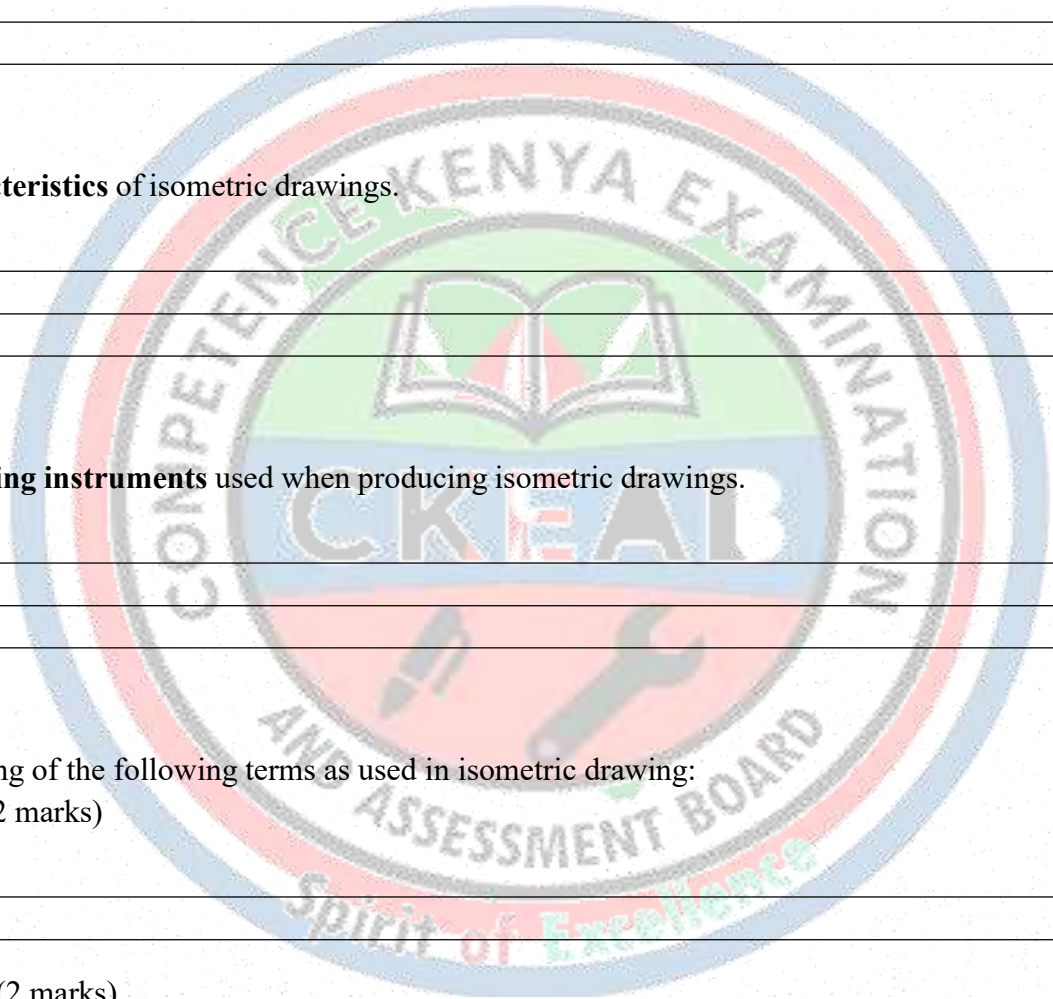
- i. 

---
- ii. 

---
- iii. 

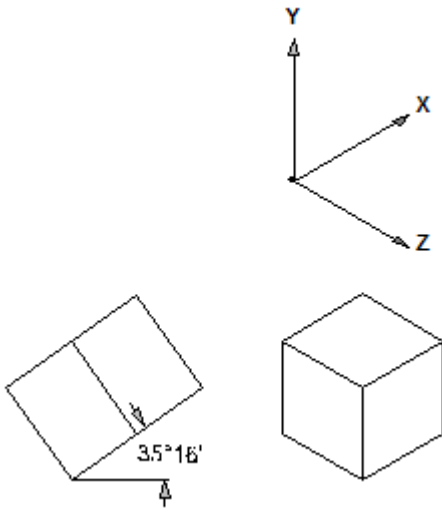
---
- iv. 

---



**7. (6 marks)**

Study the isometric axes below.



a) Name the three axes shown. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) State the angle between axis X and axis Y in isometric drawing. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

c) State TWO reasons why isometric axes are important in drawing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**8. (4 marks)**

Give three differences between:

a) Isometric drawing and Orthographic drawing (3 marks)

	Isometric drawing	Orthographic drawing
i		
ii		
iii		

**9. (4 marks)**

State **four advantages** of using isometric drawings in construction work.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**10. (6 marks)**

A learner is required to draw a rectangular block of dimensions **60 mm × 40 mm × 30 mm**.

a) Write down the three dimensions in correct order (Length, Width, Height). (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) State **ONE** common error made when drawing the block in isometric. (1 mark)

\_\_\_\_\_  
\_\_\_\_\_

c) State **TWO** ways to avoid the error. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**11. (5 marks)**

Explain **five rules** followed when drawing straight lines in isometric projection.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**12.**

a. Using a labeled vertical cross sectional sketch, show the damp proof details provided on a parapet wall and roof covered with iron sheets. (8 marks)

b. A fountain wall is 150mm thick. With the aid of a labeled sketch, determine the: (7 marks)

- i. Depth of foundation concrete
- ii. Projection of the foundation concrete
- iii. Foundation width

**13. (4 marks)**

a) Outline four principles of free hand sketching

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

b) Explain **four reasons** why freehand sketching is important before using drawing instruments.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**14. (3 marks)**

State **three safety precautions** observed when using drawing instruments.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**15. (2 marks)**

Define the term **dimensioning** as used in technical drawing.

\_\_\_\_\_  
\_\_\_\_\_

**16. (4 marks)**

State **four rules** followed when dimensioning an isometric drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**17. (6 marks)**

Explain the functions of the following in dimensioning:

a) Extension lines (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

b) Dimension lines (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

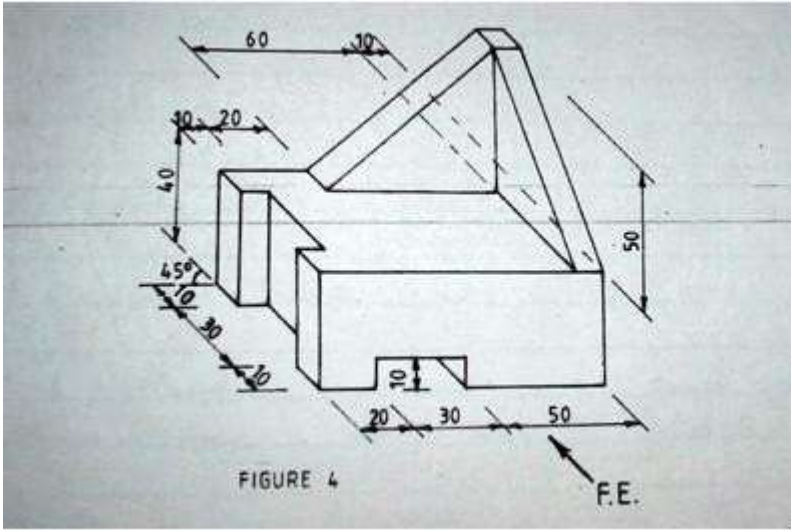
c) Arrowheads (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

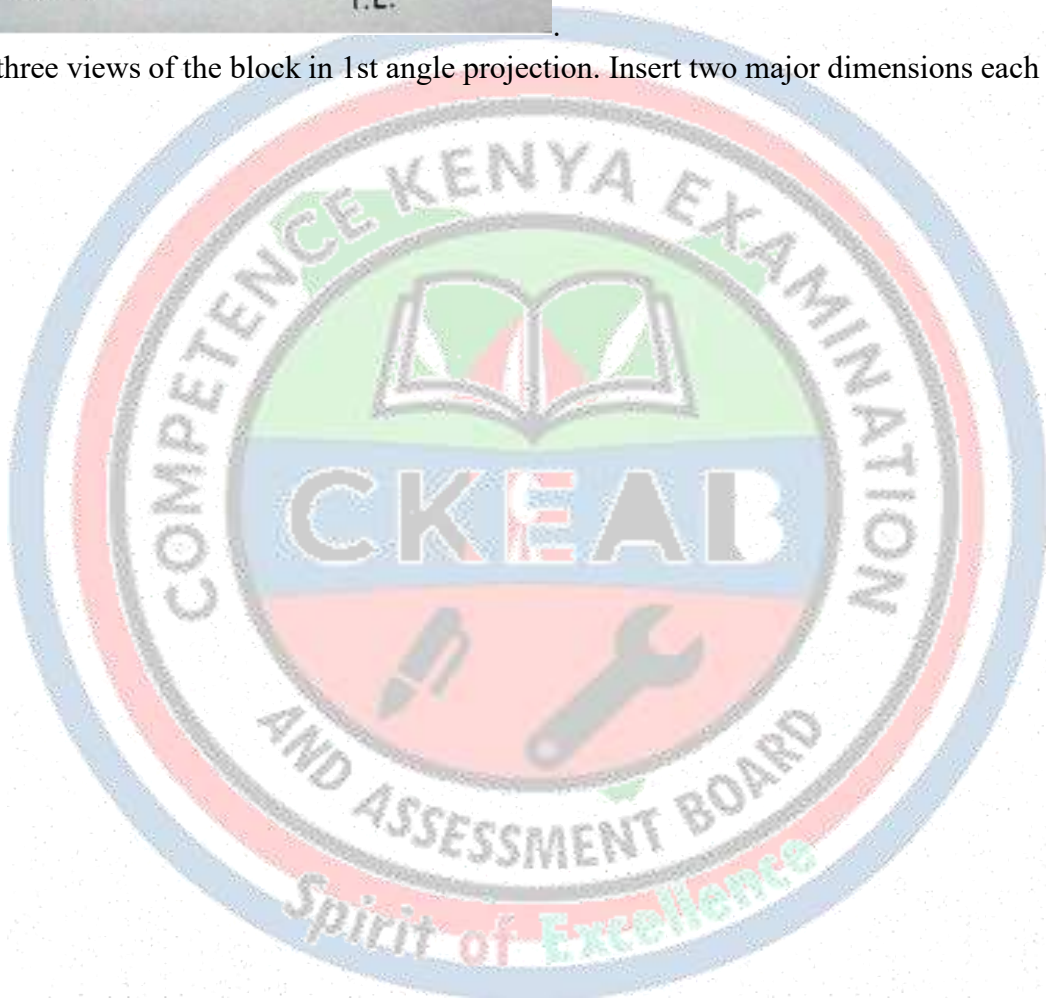


18. (8 marks)

Figure below shows a pictorial view of a block



Draw full size the three views of the block in 1st angle projection. Insert two major dimensions each view. (15 marks)



**19. (4 marks)**

A learner wrote dimensions without units on a drawing.

a) State why this is a problem. (2 marks)

---

---

b) Suggest TWO ways to correct the drawing. (2 marks)

---

---

**20. (5 marks)**

Describe the correct procedure for dimensioning a shaped block drawn in isometric projection.

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---

**21. (6 marks)**

A carpenter wants to create a wooden step block for a staircase model.

Explain how isometric projection would help the carpenter in:

a) Planning the shape (2 marks)

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b) Measuring accurately (2 marks)

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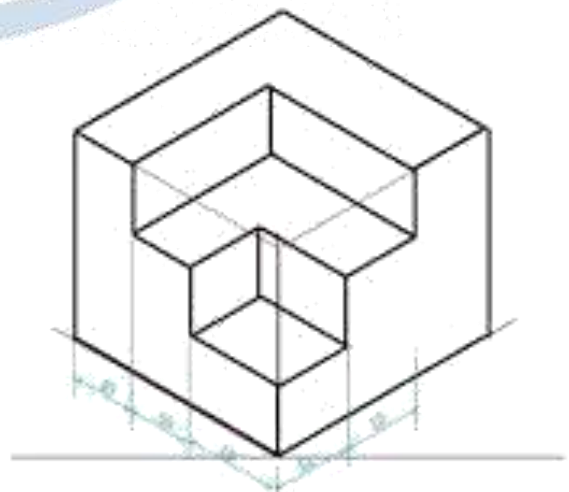
c) Avoiding material wastage (2 marks)

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**22. (8 marks)**

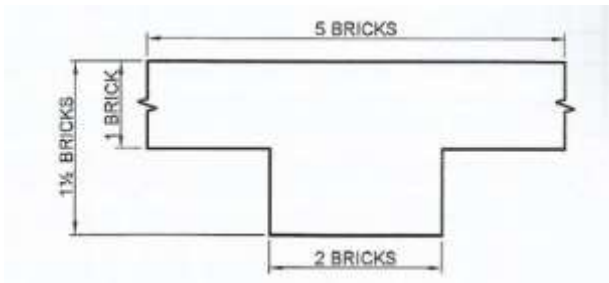
(a) Study the stepped block below.





(c)

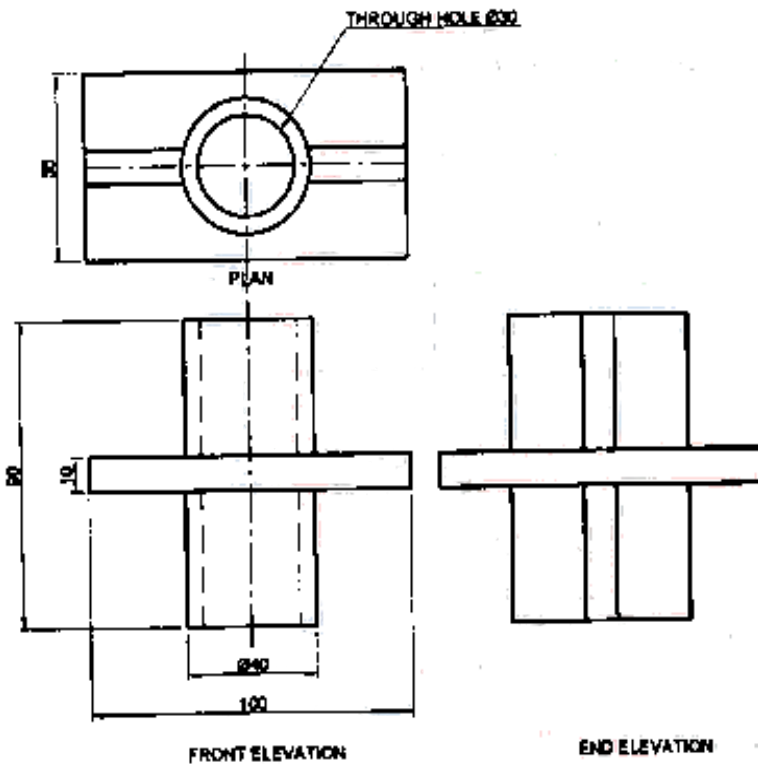
- i. The figure shows a one brick thick wall with an attached pier in English bond. Sketch the plans of two alternate courses to show the bonding details at the pier. (6 marks)



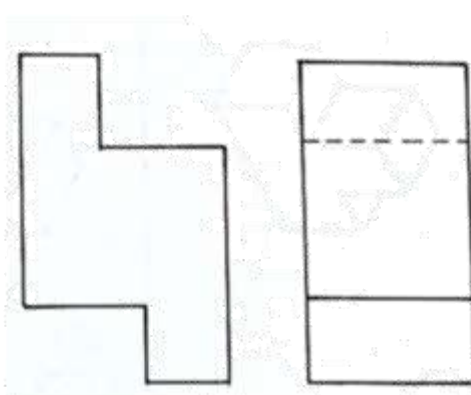
- ii. Sketch and label a deep strip foundation. (4 marks)

- iii. Outline the procedure of fixing wall tiles. (5 marks)

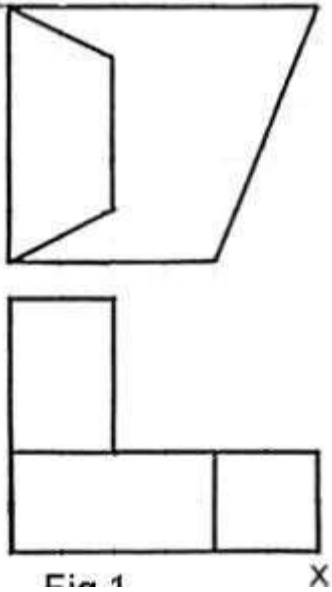
(d) The figure below shows three views of a hollow wooden block drawn in third angle projection. Draw the block Full Size in isometric projection. (15 marks)



(e) Sketch the orthographic projections given below in isometric (6 marks)



(f) Sketch the orthographic projections given in the figure below in isometric projection taking x as the lowest point. (6 marks)



(g) Using the provided isometric view of the object below, draw the following orthographic views in **first angle projection**:

- Front elevation (viewed in direction of arrow X)
- End elevation (viewed from the right side)
- Plan view (viewed from the top)

**Requirements:**

- Draw to a scale of **1:1 (Full Size)**.
- Add **six (6) key dimensions** to your drawing.
- Include a simple title block indicating "Object Drawing" your name/assessment number, and the scale used.

**(Examiner: Provide a clear, simple isometric sketch of an object, e.g., an L-block or a step block, with clear dimensions. Example dimensions: Length 70mm, Width 40mm, Height 50mm, with one step/cutout.)**

**23. (4 marks)**

State **four reasons** why construction workers use shaped blocks in drawing practice.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**24. (6 marks)**

A learner drew a block correctly but dimensioned it wrongly by placing dimensions inside the object.

a) Explain TWO effects of wrong dimension placement. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Explain TWO effects of wrong dimension values. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Explain TWO effects of unclear arrowheads. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**25. (4 marks)**

Explain **four reasons** why neatness is important in isometric drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**26. (6 marks)**

A construction team is building a small house.

Explain how isometric drawings can improve communication between:

a) The architect and client (2 marks)

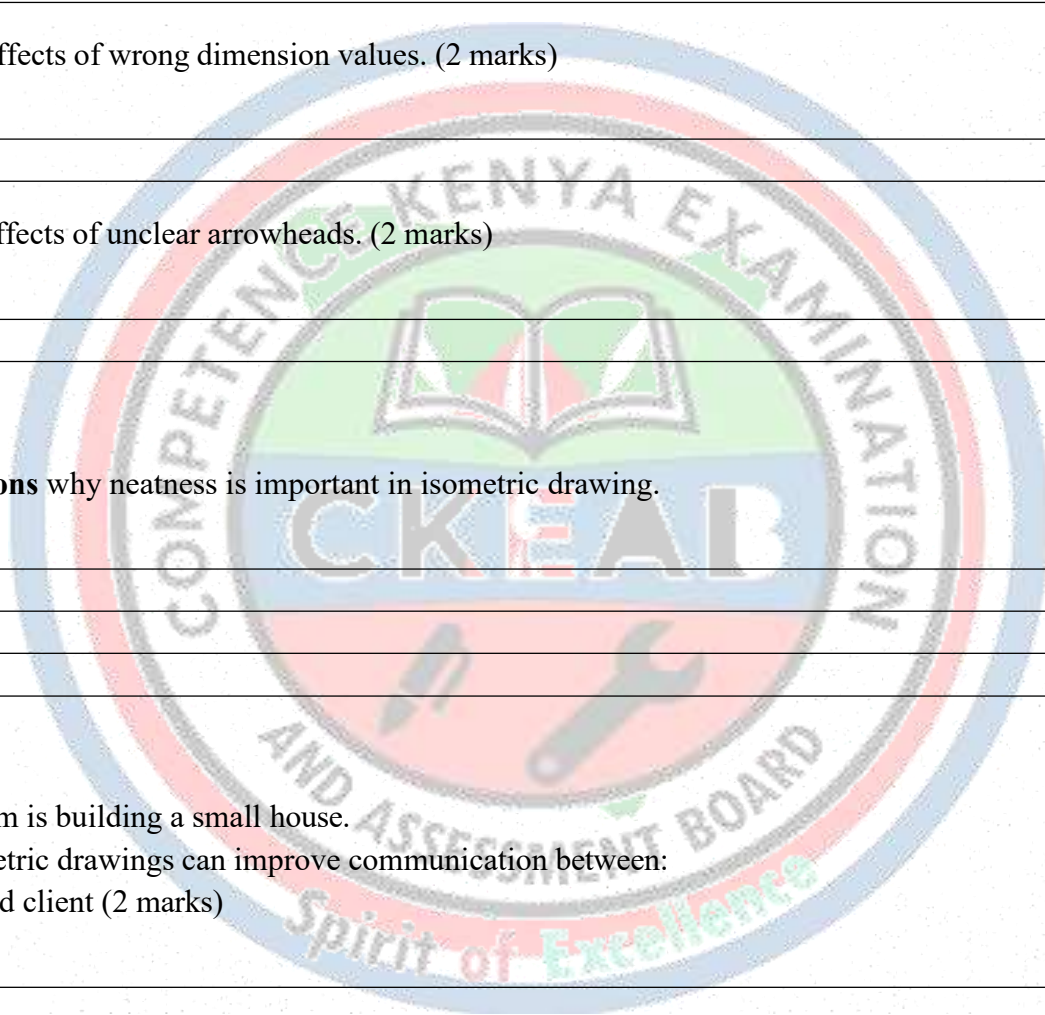
\_\_\_\_\_  
\_\_\_\_\_

b) The mason and carpenter (2 marks)

\_\_\_\_\_  
\_\_\_\_\_

c) The site supervisor and workers (2 marks)

\_\_\_\_\_  
\_\_\_\_\_



**27. (4 marks)**

Explain **four ways** a learner can improve accuracy in isometric drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**28. (4 marks)**

A learner used the correct measurements but drew the axes wrongly.

a) State **TWO** possible mistakes in axis drawing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) State **TWO** effects of wrong axes. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**29. (6 marks)**

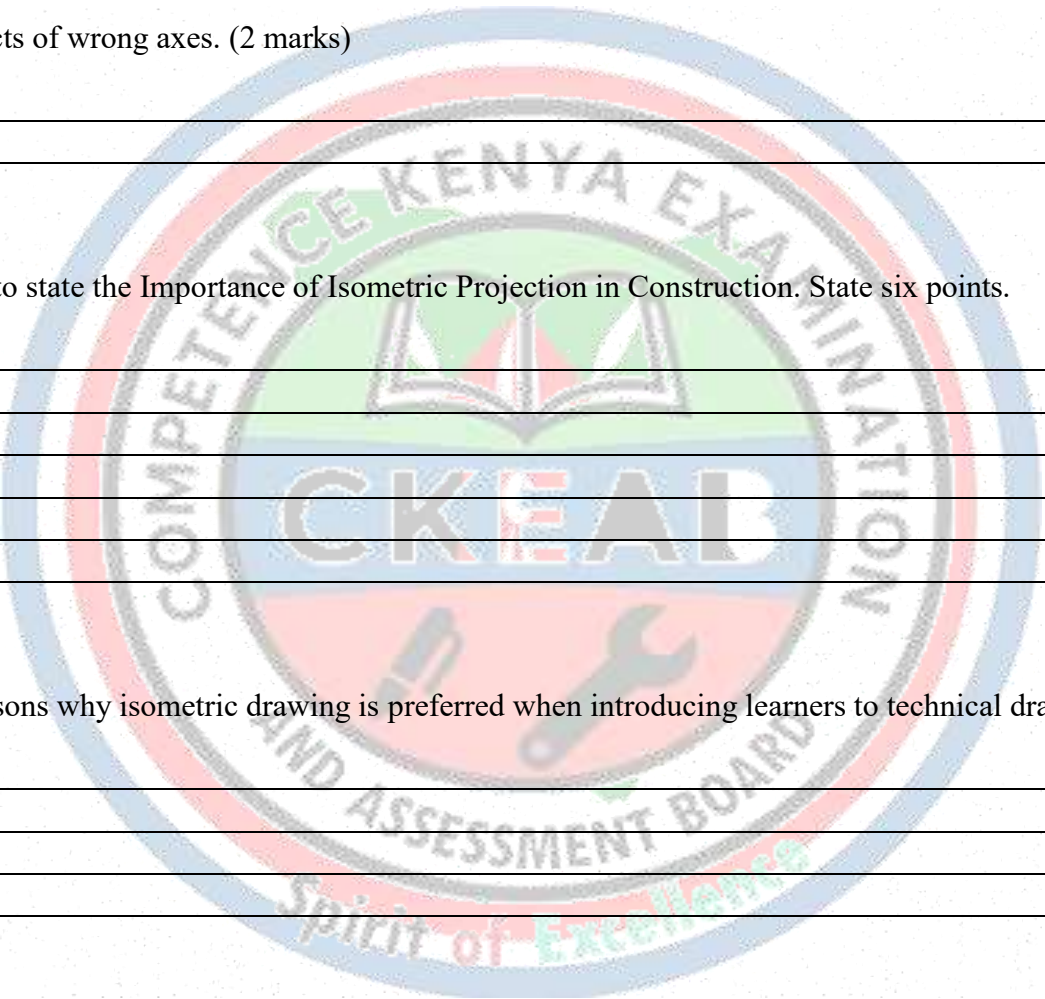
A student is asked to state the Importance of Isometric Projection in Construction. State six points.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**30. (4 marks)**

Explain **FOUR** reasons why isometric drawing is preferred when introducing learners to technical drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_



**STRAND 2.0: RELATED DRAWING**

**SUB STRAND 2.2: COMPUTER AIDED DRAWING (CAD)**

**SECTION A: CAD BASICS (100 MARKS)**

**1. (2 marks)**

Define the term **Computer Aided Drawing (CAD)**.

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**2. (2 marks)**

State **two advantages** of using CAD instead of manual drawing in building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**3. (3 marks)**

State **three examples** of CAD software used in building drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**4. (3 marks)**

List **three devices or hardware components** needed to use CAD effectively.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**5. (4 marks)**

A Grade 10 learner wants to install CAD software in the computer laboratory.

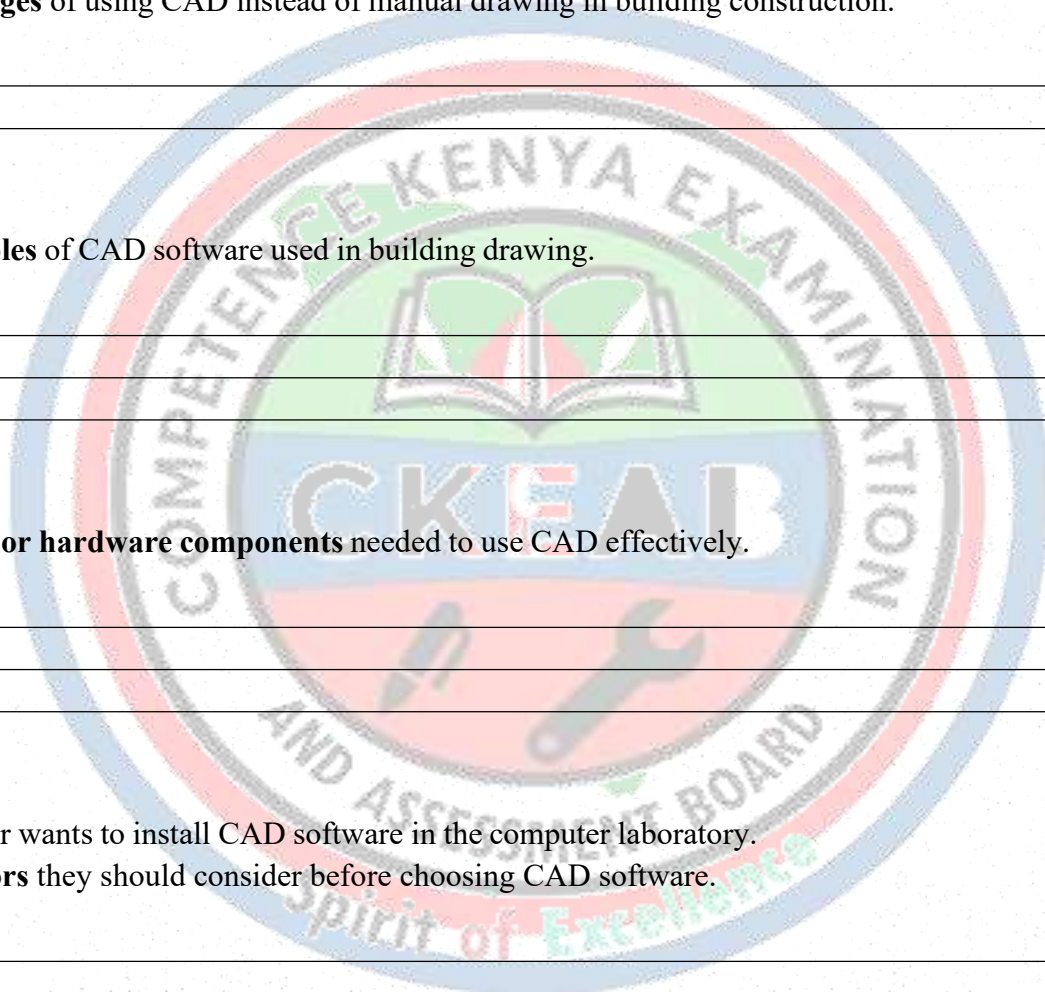
Explain **four factors** they should consider before choosing CAD software.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**6. (4 marks)**

Explain **four uses of CAD** in building construction technology.

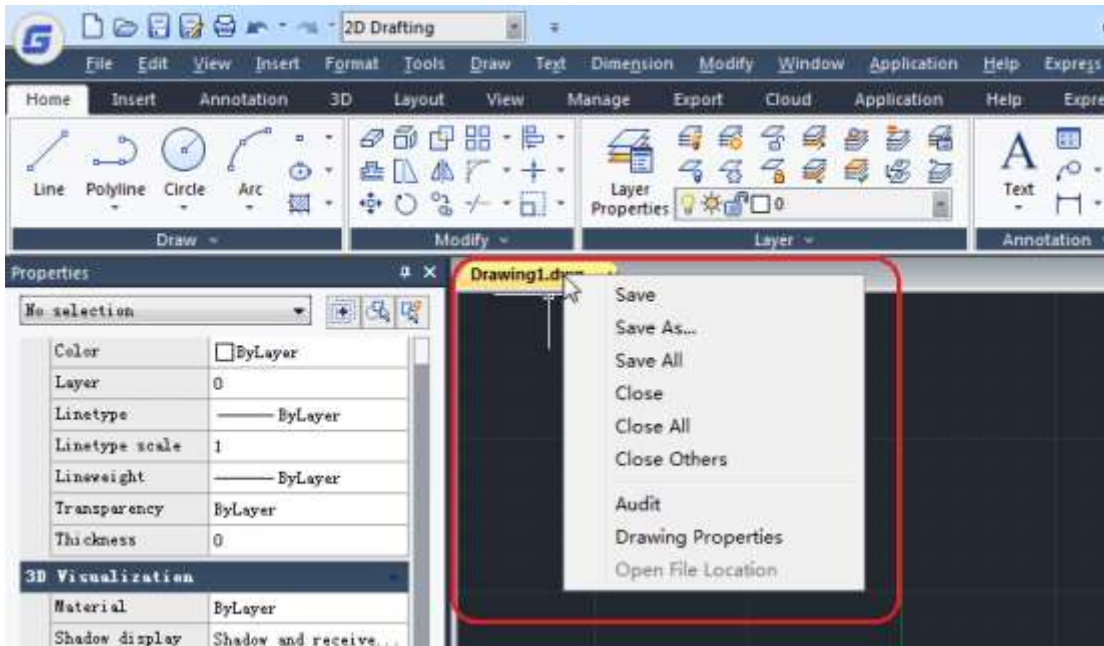
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_



**DIAGRAM 1: CAD WORKSPACE**

**7. (6 marks)**

Study the CAD interface below.



a) Name two components of the CAD Interface. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) State TWO functions of the command line. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) State TWO functions of toolbars in CAD. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**8. (3 marks)**

State THREE features of CAD that make drawing faster.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**9. (4 marks)** Differentiate between:

a) CAD software and CAD drawing environment (4 marks)

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**10. (6 marks)**

Outline SIX steps followed when setting up a CAD drawing environment for building drawings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**11. (4 marks)**

Explain FOUR reasons why setting correct **units** in CAD is important before drawing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**12. (4 marks)**

A learner sets the CAD units in inches instead of millimetres.

a) State TWO problems that may occur. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

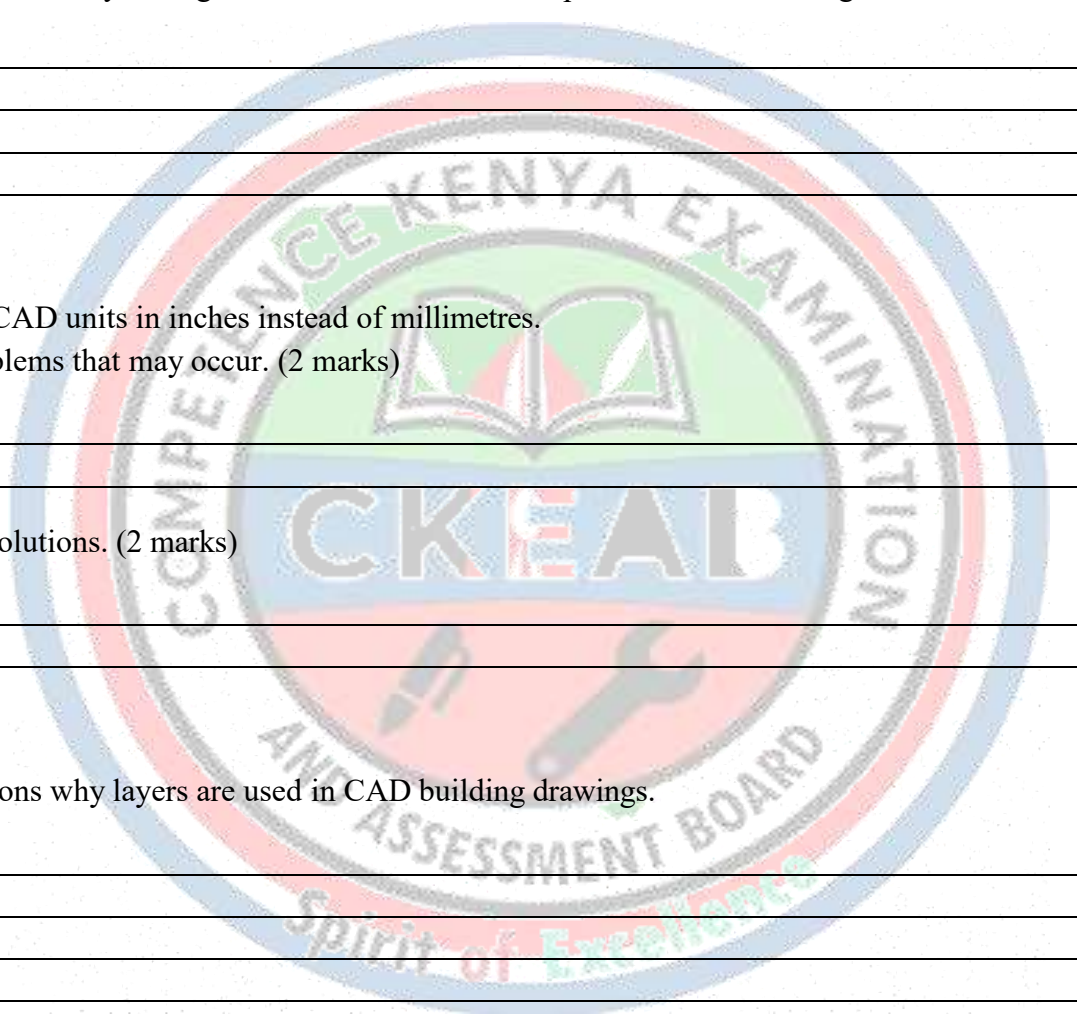
b) Suggest TWO solutions. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**13. (5 marks)**

Explain FIVE reasons why layers are used in CAD building drawings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_



**14. (6 marks)**

Study the layer list below.

Layer Name	Colour	Line Type	Status
WALLS	Red	Continuous	ON
DOORS	Blue	Continuous	ON
WINDOWS	Green	Continuous	OFF
DIMENSIONS	Yellow	Dashed	ON
TEXT	White	Continuous	ON

a) Which layer is currently OFF? (1 mark)

\_\_\_\_\_

b) State TWO reasons why the WINDOWS layer may be OFF. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Identify TWO layers that would help in producing a clean plan drawing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

d) State advantages of using separate layers for doors and windows. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**15. (3 marks)**

Name THREE plane shapes commonly drawn using CAD in building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**16. (6 marks)**

A learner is required to draw a rectangle of **80 mm by 50 mm** in CAD.

Explain SIX steps the learner should follow.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**17. (5 marks)**

Explain FIVE CAD commands/tools used when drawing plane shapes.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**18. (8 marks)**

a) Describe the procedure for drawing right angled triangle in AutoCAD. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

b) State ONE CAD tool used to draw each of the shapes. (4 marks)

Triangle: \_\_\_\_\_

Rectangle: \_\_\_\_\_

Circle: \_\_\_\_\_

Square: \_\_\_\_\_

**19. (4 marks)**

(a) Name three types of CAD soft wares used in building drawings

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

(b) Explain FOUR ways CAD ensures accuracy when drawing plane shapes.

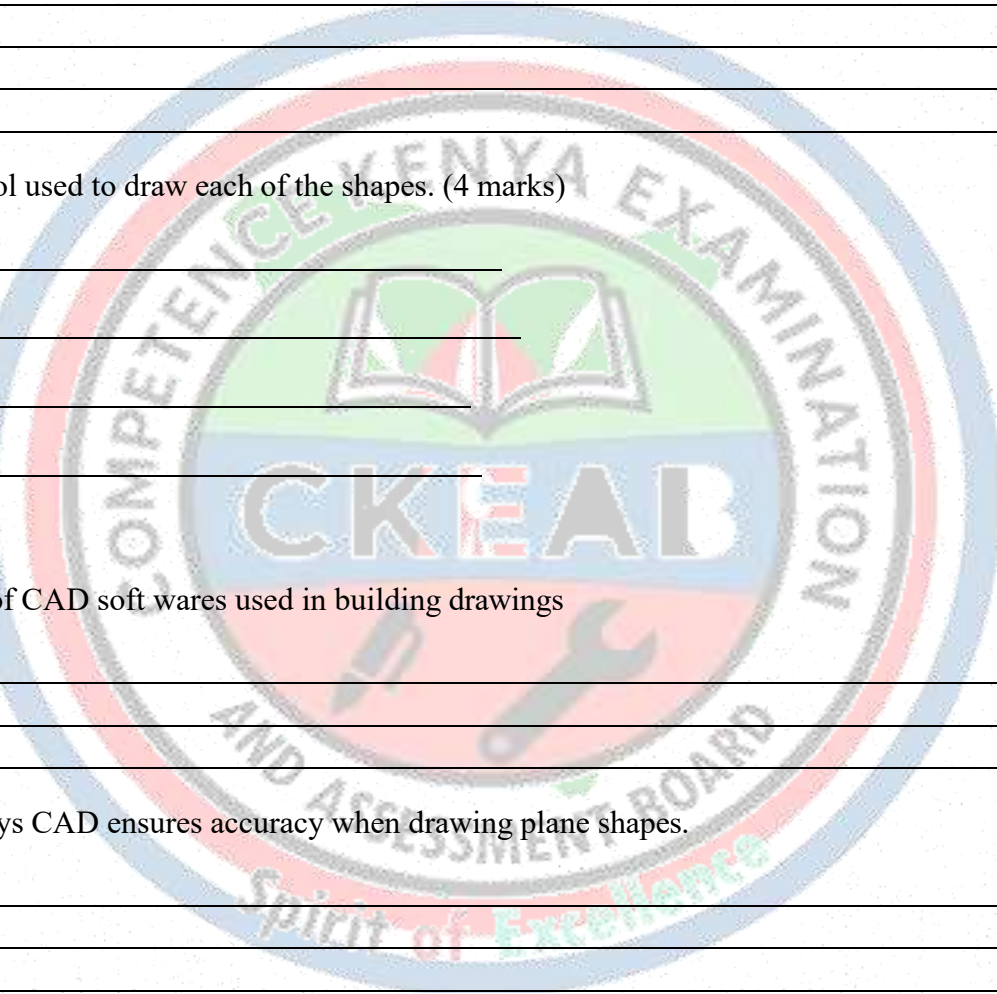
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**20. (6 marks)**

A student draws a perfect rectangle but the building plan still looks unprofessional.

Explain THREE possible reasons related to CAD settings and THREE corrections.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



**21. (4 marks)**

Explain FOUR functions of the following CAD tools:

a) Trim (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Offset (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**22. (6 marks)**

Describe the procedure for creating a door opening in a wall using CAD tools.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**23. (6 marks)**

A learner draws a building plan but forgets to use layers.

Explain THREE problems that may occur and THREE benefits of using layers properly.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**24. (4 marks)**

Explain FOUR reasons why saving CAD work frequently is important.

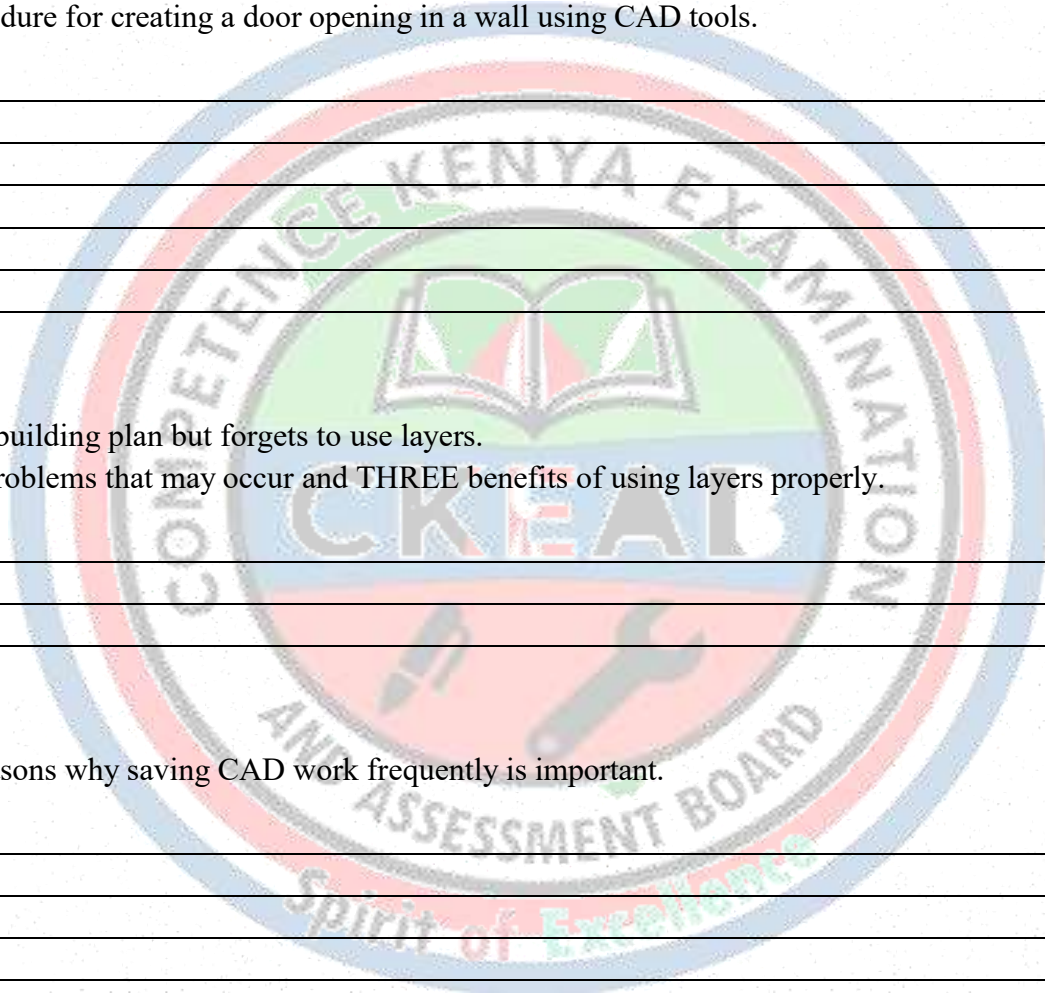
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**25. (5 marks)**

A learner is asked to create an **e-portfolio** of plane shapes made using CAD software.

Describe FIVE items that should be included in the e-portfolio.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_



**26. (4 marks)**

(a) State FOUR common file formats used to save CAD drawings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

(b) State four benefits of cad in building drawing

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

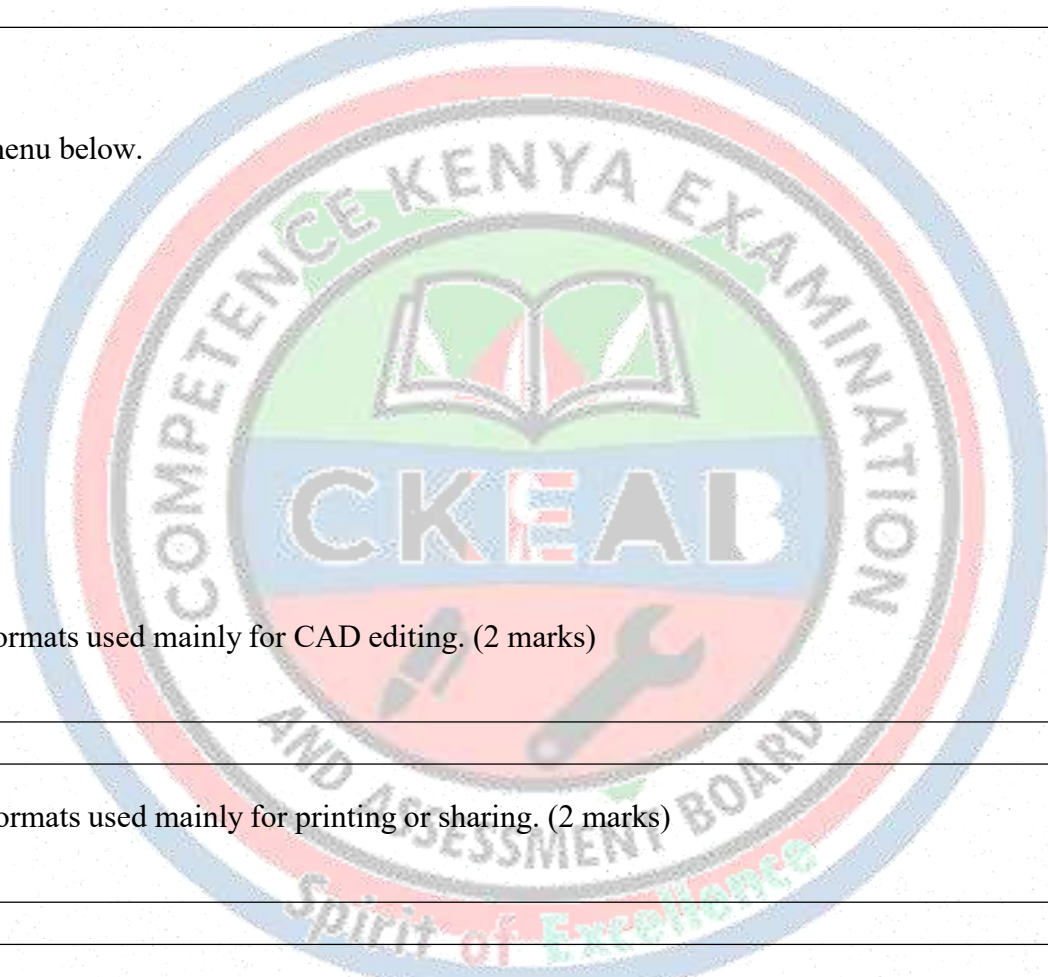
**27. (6 marks)**

Study the export menu below.

**DIAGRAM 4**

Export Options:

- PDF
- DWG
- DXF
- JPG
- PNG
- STL



a) Identify TWO formats used mainly for CAD editing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Identify TWO formats used mainly for printing or sharing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Identify ONE format used mainly for 3D modelling/printing. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

d) State ONE reason why JPG is not the best for editing CAD drawings. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

**28. (6 marks)**

A construction company is deciding whether to shift from manual drawing to CAD.

Give SIX convincing reasons why CAD should be adopted.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**29. (4 marks)**

State FOUR careers that require CAD skills in the construction industry.

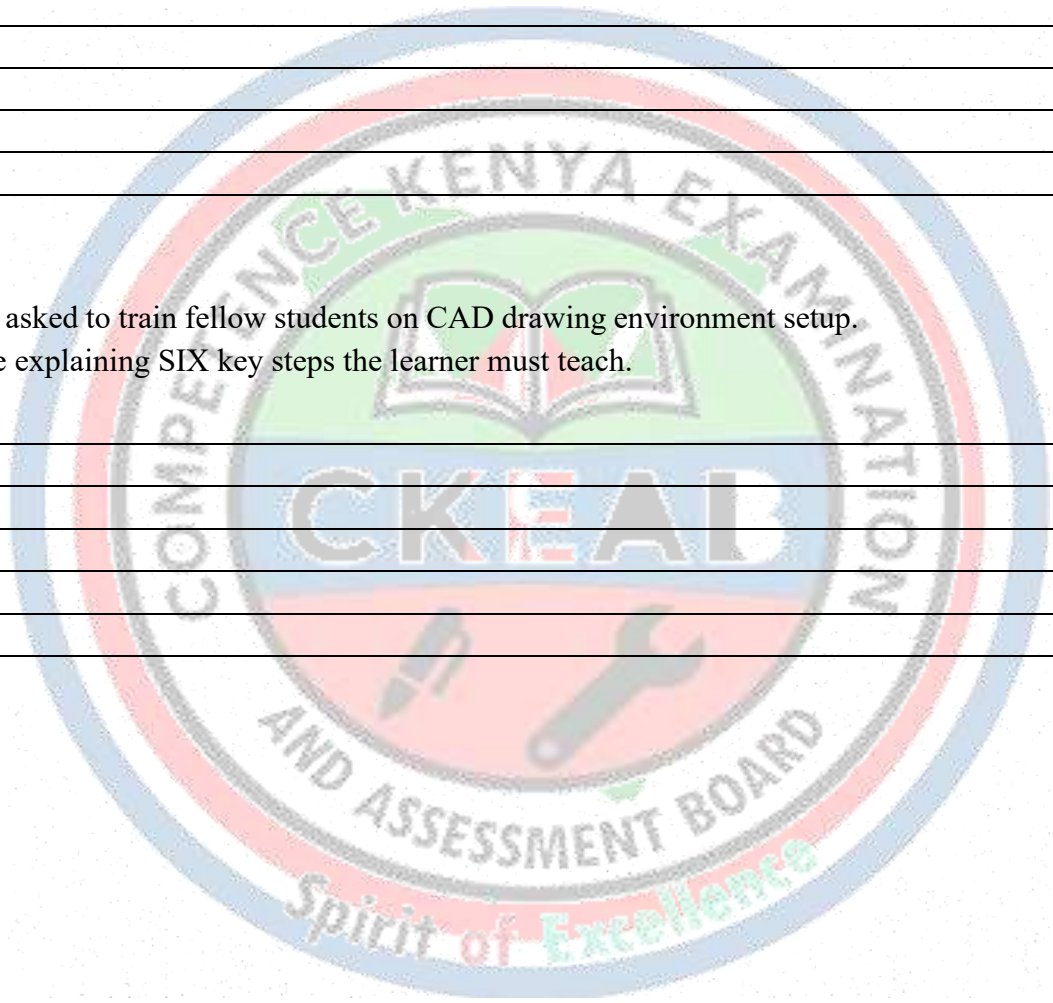
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**30. (6 marks)**

A learner has been asked to train fellow students on CAD drawing environment setup.

Write a short guide explaining SIX key steps the learner must teach.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_



**STRAND 3.0: BUILDING CONSTRUCTION PROCESSES**

**SUB STRAND 3.1: CONCRETING**

**SECTION: CONCRETING (100 MARKS)**

**1. (2 marks)**

Define the term **concrete**.

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**2. (4 marks)**

List FOUR constituent materials used to make concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**3. (3 marks)**

State THREE uses of concrete in building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**4. (3 marks)**

State THREE properties of good concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**5. (6 marks)**

Study the diagram below.

**DIAGRAM 1**

[A]

[B]

[C]

[D]



a) Identify materials A, B, C and D. (4 marks)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

b) State ONE role of sand in concrete. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

c) State ONE role of coarse aggregates in concrete. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

**6. (4 marks)**

State FOUR hand tools used in concreting and their functions.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**7. (6 marks)**

Match the tools in List A with their uses in List B.

**LIST A**

- 1. Wheelbarrow
- 2. Shovel
- 3. Rake
- 4. Trowel
- 5. Head pan
- 6. Wooden float

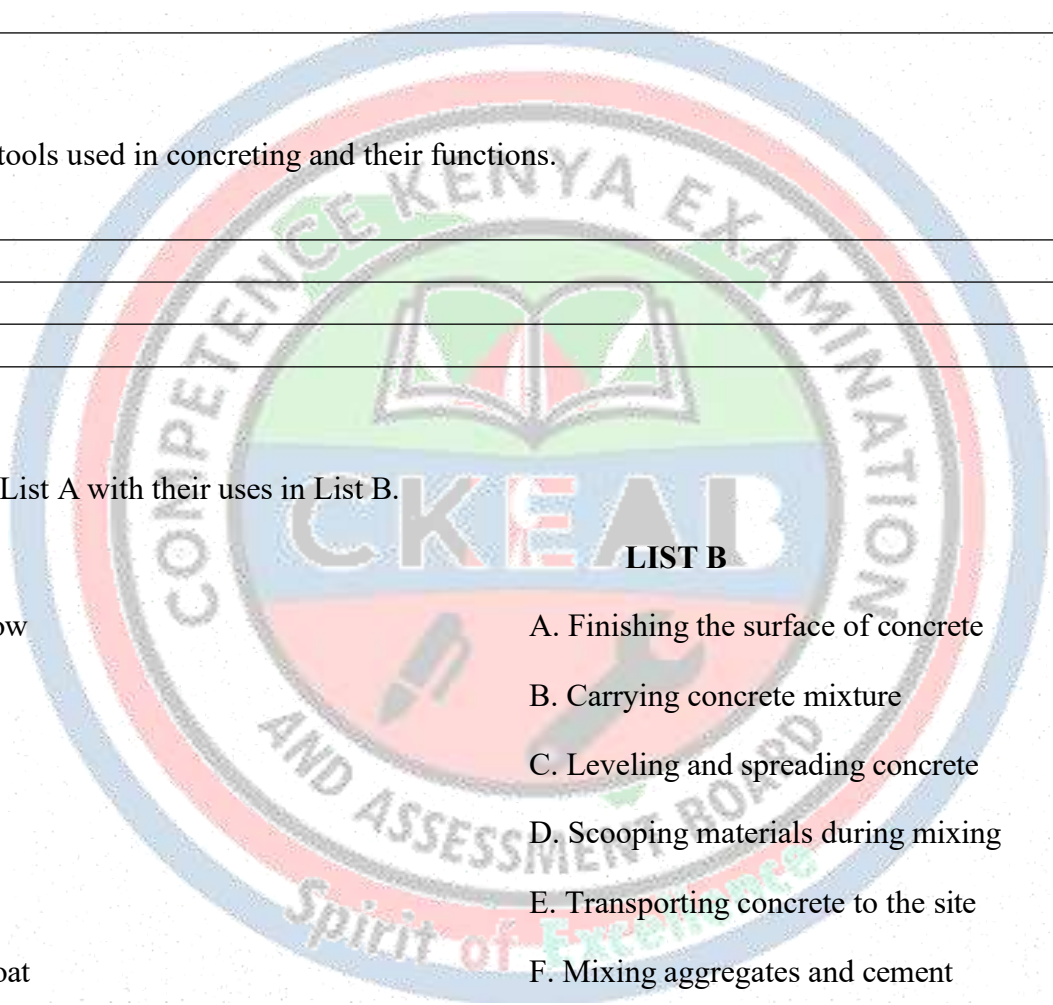
**LIST B**

- A. Finishing the surface of concrete
- B. Carrying concrete mixture
- C. Leveling and spreading concrete
- D. Scooping materials during mixing
- E. Transporting concrete to the site
- F. Mixing aggregates and cement

**8. (4 marks)**

Explain FOUR safety precautions observed when working with cement and wet concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



**9. (6 marks)**

Outline SIX steps followed when making concrete from start to finish.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**10. (5 marks)**

Describe the process of **batching** concrete materials using:

a) Gauge box method (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

b) Head pan method (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**11. (6 marks)**

Study the flow chart below.

Batching → Mixing → Transporting → Placing → Compacting → Curing

a) Explain what is done during **placing**. (2 marks)

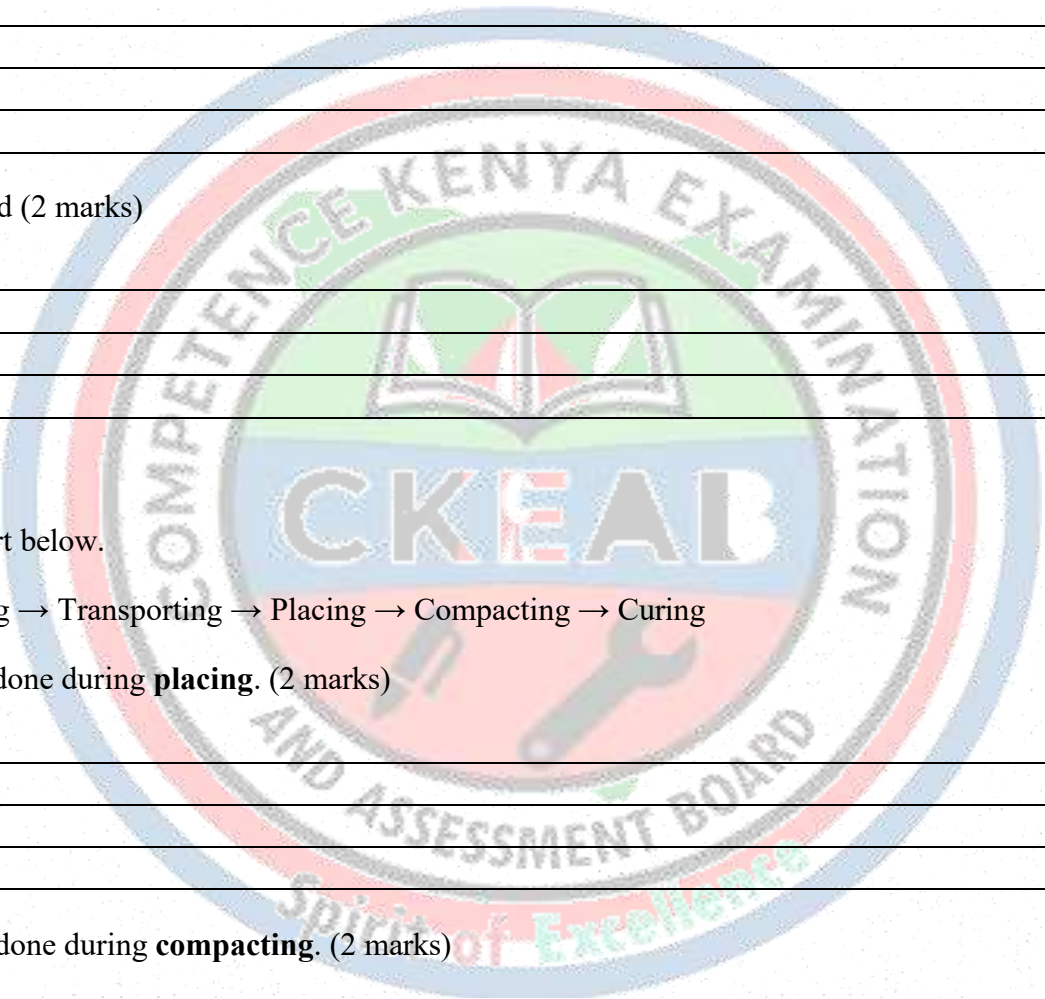
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

b) Explain what is done during **compacting**. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

c) State TWO reasons why curing is done. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_



**12. (2 marks)**

What is meant by a **mix ratio** in concrete?

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**13. (6 marks)**

A learner is instructed to produce concrete using a mix ratio of **1:2:4**.

a) State what the numbers represent. (3 marks)

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---

b) Identify which part is cement, sand and coarse aggregates. (3 marks)

- i.
- ii.
- iii.
- iv.

---

---

---

---

**14. (8 marks)**

Study the table below.

**DIAGRAM 3**

	Mix Ratio	Cement	Sand	Coarse Aggregates
X	1 : 2 : 4	1	2	4
Y	1 : 3 : 6	1	3	6
Z	1 : 1 : 2	1	1	2

a) Which mix ratio gives the **strongest concrete**? (1 mark)

---

b) Which mix ratio gives the **weakest concrete**? (1 mark)

---

c) Explain why the strongest mix gives better strength. (2 marks)

- i.
- ii.
- iii.

---

---

---

d) Suggest a suitable mix ratio for:

i) Foundation slab (2 marks)

---

---

ii) Non-load bearing floor screed (2 marks)

---

---

**15. (6 marks)**

A class is to make concrete using **2 bags of cement** and a mix ratio of **1:2:4**.

a) Calculate the number of parts of sand required. (2 marks)

b) Calculate the number of parts of coarse aggregates required. (2 marks)

c) Explain TWO mistakes learners should avoid when measuring materials. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**16. (4 marks)**

State FOUR reasons why too much water in concrete is discouraged.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**17. (5 marks)**

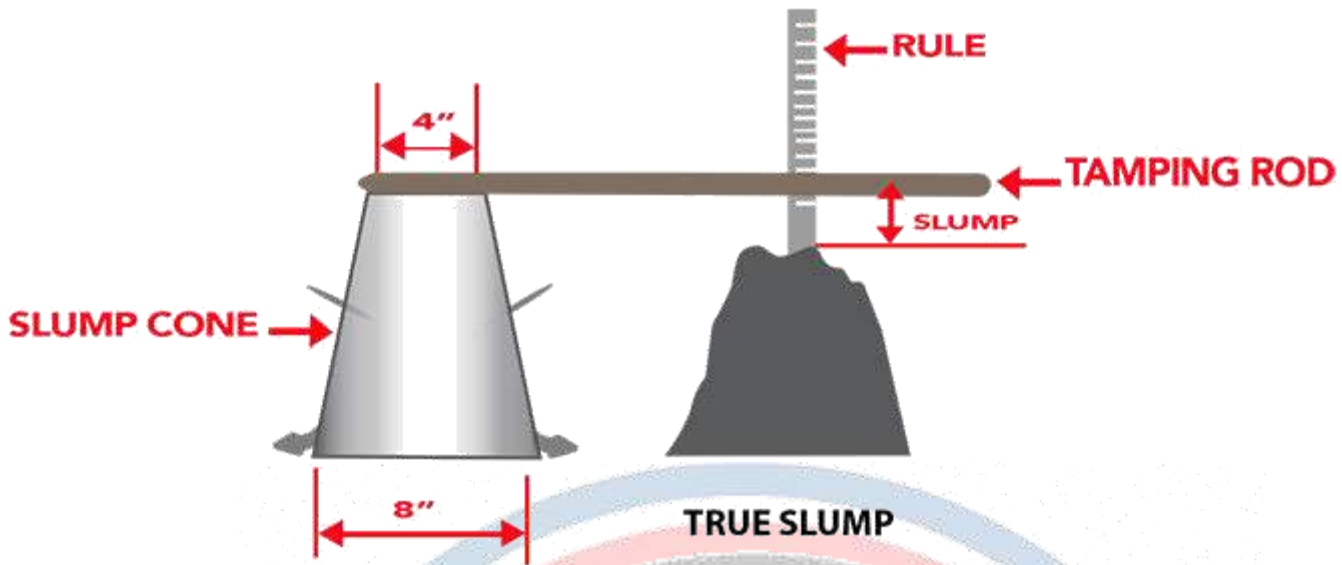
Explain FIVE factors that affect the workability of concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_



**18. (6 marks)**

Study the slump test set-up below.



a) State the purpose of a slump test. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Explain TWO signs that show concrete is too wet. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Explain TWO signs that show concrete is too dry. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**19. (4 marks)**

Describe FOUR correct methods of transporting concrete on a construction site.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**20. (5 marks)**

Explain FIVE problems that may occur if concrete is transported for too long before placing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**21. (6 marks)**

Explain SIX methods of compacting concrete and where each method is used.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**22. (6 marks)**

Study the defect below that shows a Concrete surface with certain defects.



a) Name the defect shown. (1 mark)

\_\_\_\_\_

\_\_\_\_\_

b) State THREE causes of the defect. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

c) Suggest TWO ways of preventing the defect. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**23. (3 marks)**

State THREE methods of curing concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

iii. \_\_\_\_\_

**24. (6 marks)**

Explain SIX reasons why curing is important in building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**25. (6 marks)**

A learner accidentally gets wet concrete into the eyes while mixing.

a) State TWO immediate first aid actions. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) State TWO PPE items that would have prevented this. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) Explain TWO dangers of ignoring cement burns. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**26. (4 marks)**

State FOUR reasons why concrete is widely used in building construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**27. (6 marks)**

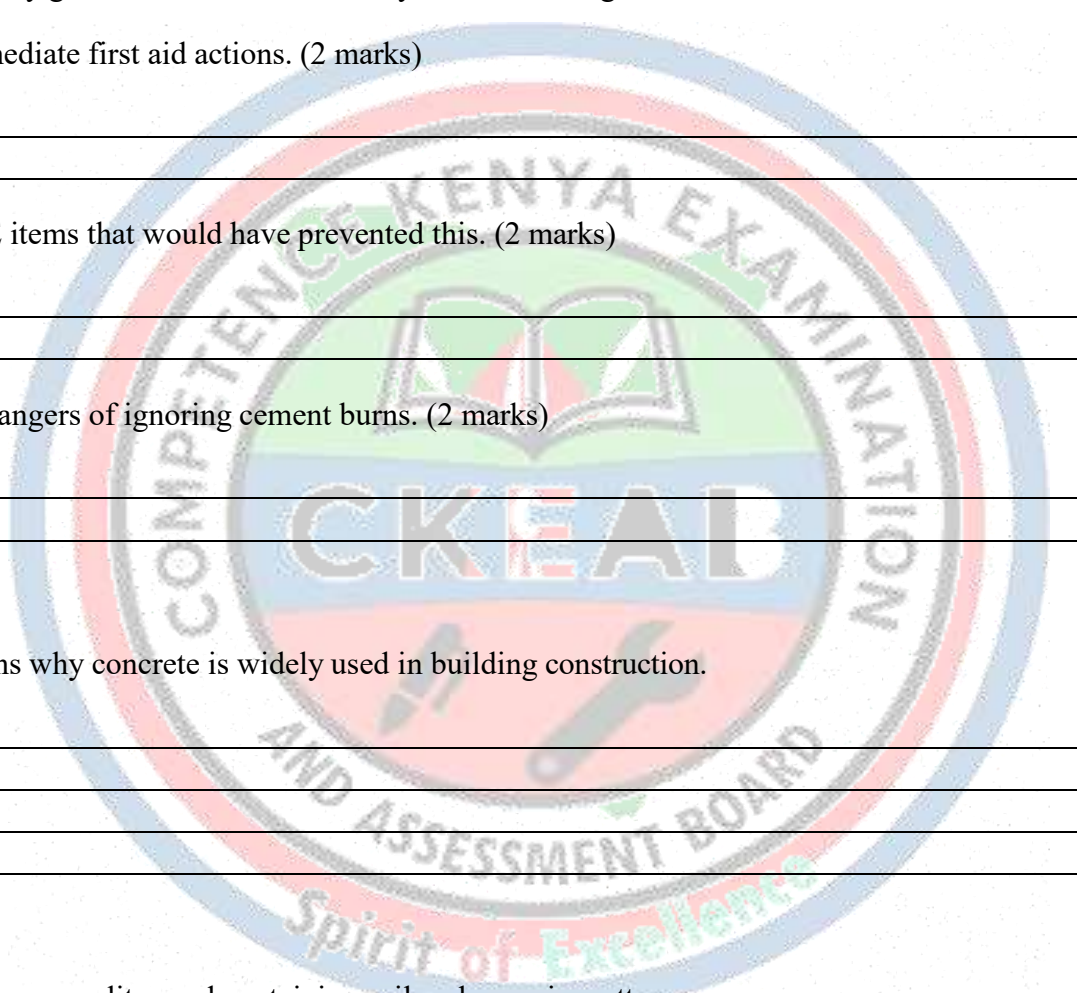
A contractor uses poor-quality sand containing soil and organic matter.

a) Explain THREE effects this may have on concrete strength. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE ways to ensure sand used is suitable. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



**28. (6 marks)**

A Grade 10 group is making concrete for a small walkway.  
After 2 days, cracks appear on the surface.

a) Explain THREE possible causes of the cracks. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE corrective measures for future work. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**29. (6 marks)**

A school wants to construct a ramp for learners with disabilities.

a) Explain THREE reasons why concrete is suitable for the ramp. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE safety features that should be included on the ramp. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

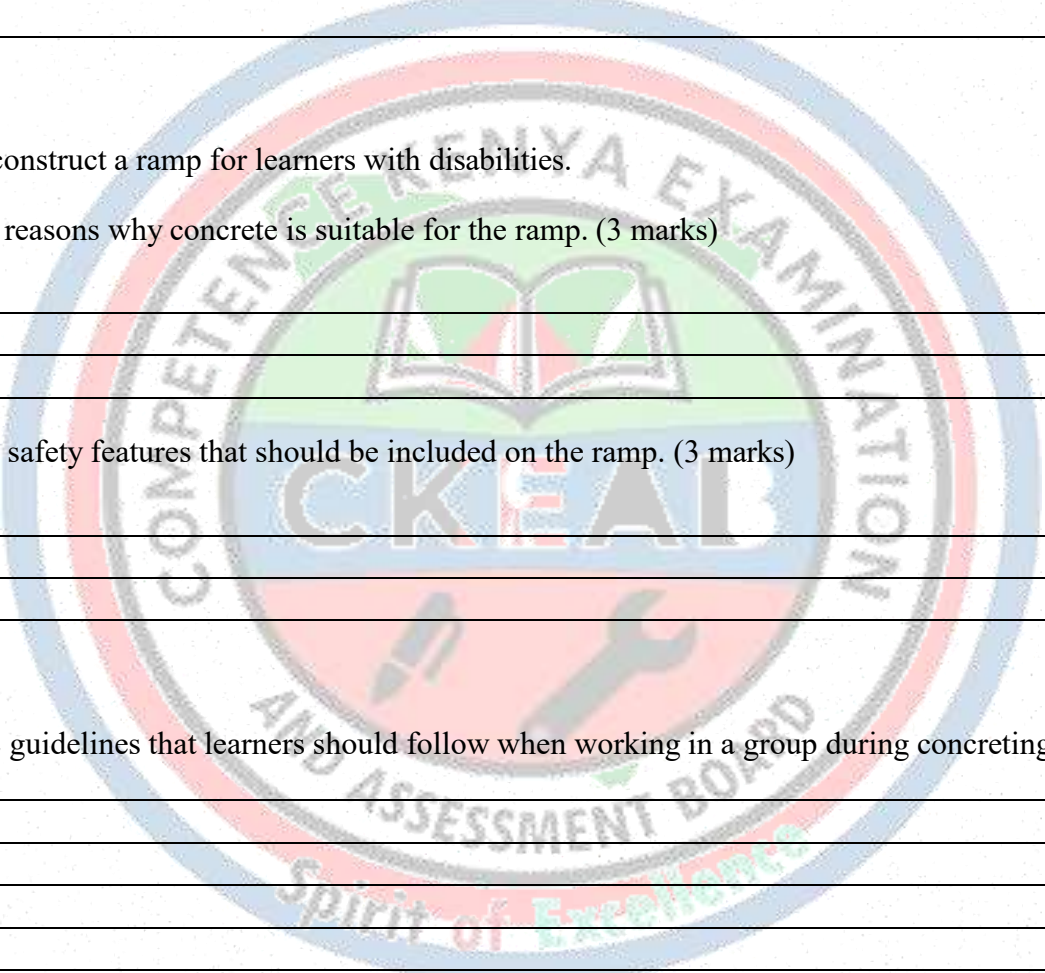
**30. (5 marks)**

a. Write FIVE guidelines that learners should follow when working in a group during concreting practical lessons.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

b. state the appropriate protective wear for each of the following parts of the body: (2 marks)

- i. Head: \_\_\_\_\_
- ii. Feet: \_\_\_\_\_
- iii. Eyes: \_\_\_\_\_
- iv. Hands: \_\_\_\_\_



# STRAND 3.0: BUILDING CONSTRUCTION PROCESSES

## SUB STRAND 3.2: FOUNDATIONS

1. (2 marks) Define the term **foundation** as used in building construction.

---

---

2. (3 marks) State THREE functions of a foundation in a building.

- i. 

---
- ii. 

---
- iii. 

---

3. (4 marks) List FOUR functional requirements of a good foundation.

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---

4. (3 marks) State THREE types of shallow foundations used in building construction.

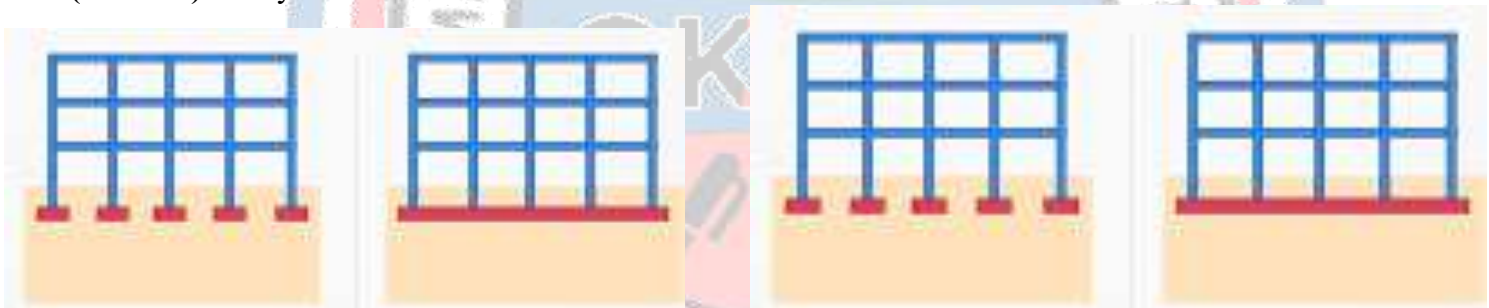
- i. 

---
- ii. 

---
- iii. 

---

5. (6 marks) Study the foundation sketches below.



A B C D

a) Name foundation types A, B and C. (3 marks)

- A. 

---
- B. 

---
- C. 

---
- D. 

---

b) State ONE situation where each foundation is suitable. (3 marks)

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---
- v. 

---

6. (4 marks)

Explain FOUR reasons why strip foundations are commonly used in residential buildings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**7. (6 marks)**

A learner is given a working drawing showing a strip foundation plan.

a) State THREE details found in a foundation plan. (3 marks)

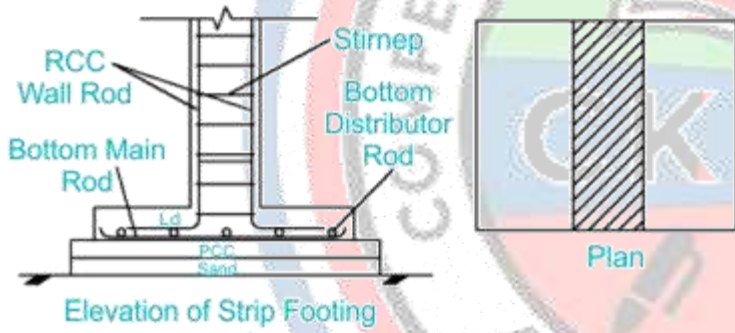
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Explain THREE reasons why working drawings are important during setting out. (3 marks)

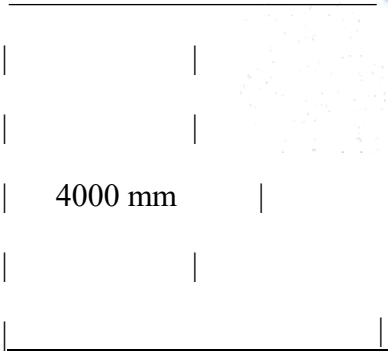
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**8. (6 marks)**

Study the strip foundation plan below.



6000 mm



a) Identify the shape of the building plan. (1 mark)

\_\_\_\_\_

b) State the length and width of the building. (2 marks)

\_\_\_\_\_

c) Calculate the perimeter distance to be set out. (3 marks)

**9. (3 marks)**

State THREE tools used during setting out of a strip foundation.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**10. (6 marks)**

a. Explain SIX steps followed when setting out a strip foundation using pegs and string lines.

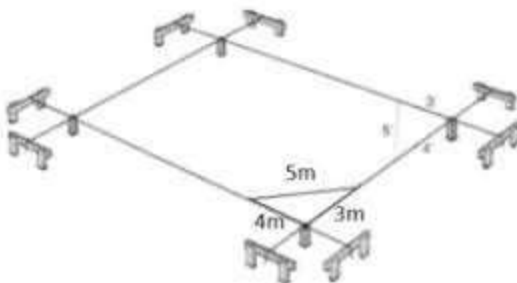
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

b. Complete the following abbreviations as used in building. (2 marks)

- i. HC- \_\_\_\_\_
- ii. DPM- \_\_\_\_\_
- iii. RC- \_\_\_\_\_
- iv. GCI- \_\_\_\_\_

**1. (6 marks)**

Study the diagram below.



a) Name the method shown. (1 mark)

\_\_\_\_\_

b) State the purpose of this method in setting out. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

c) Explain THREE steps of using this method on site. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**12. (4 marks)**

Differentiate between the following setting out methods:

a) Builder's square method and Trammel method (4 marks)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**13. (6 marks)**

A building is set out without checking diagonals.

a) Explain THREE problems that may occur during construction. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

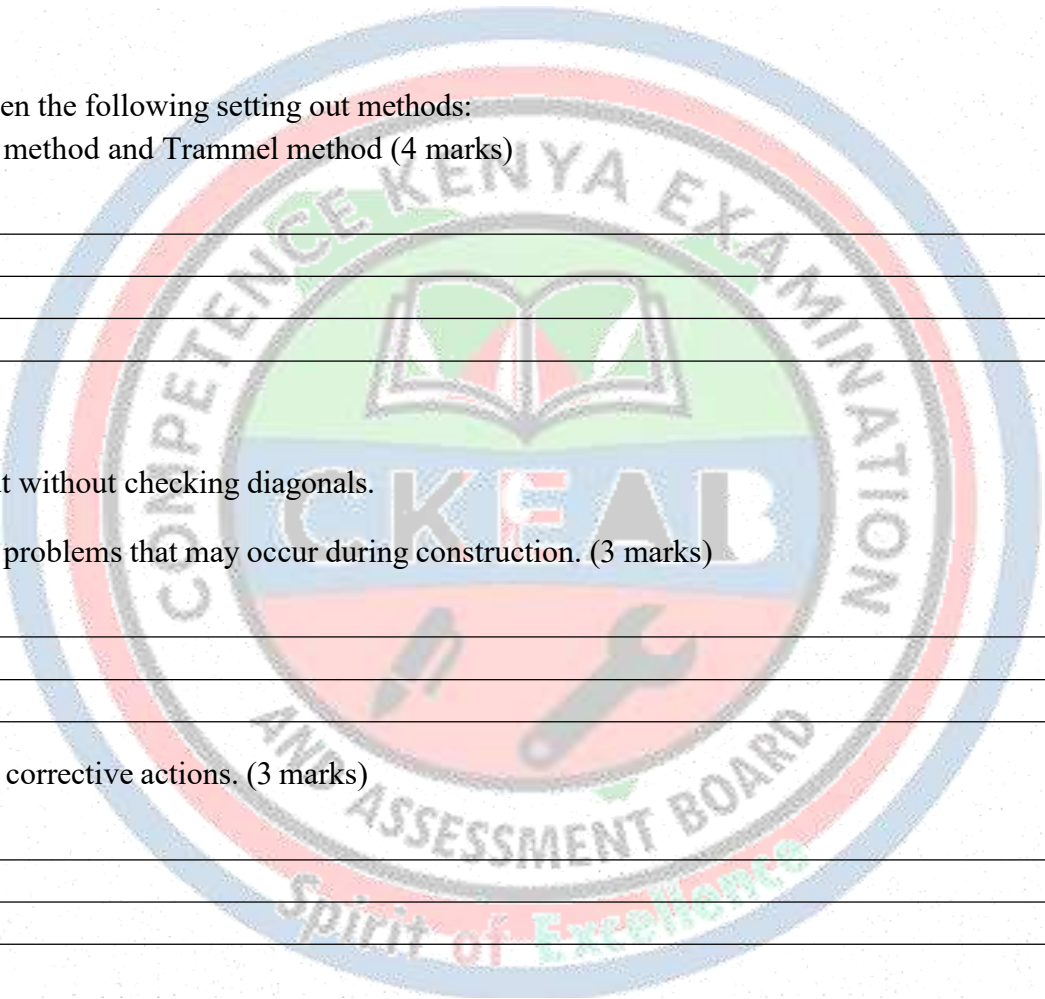
b) Suggest THREE corrective actions. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**14. (3 marks)**

State THREE hand tools used when excavating foundation trenches.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



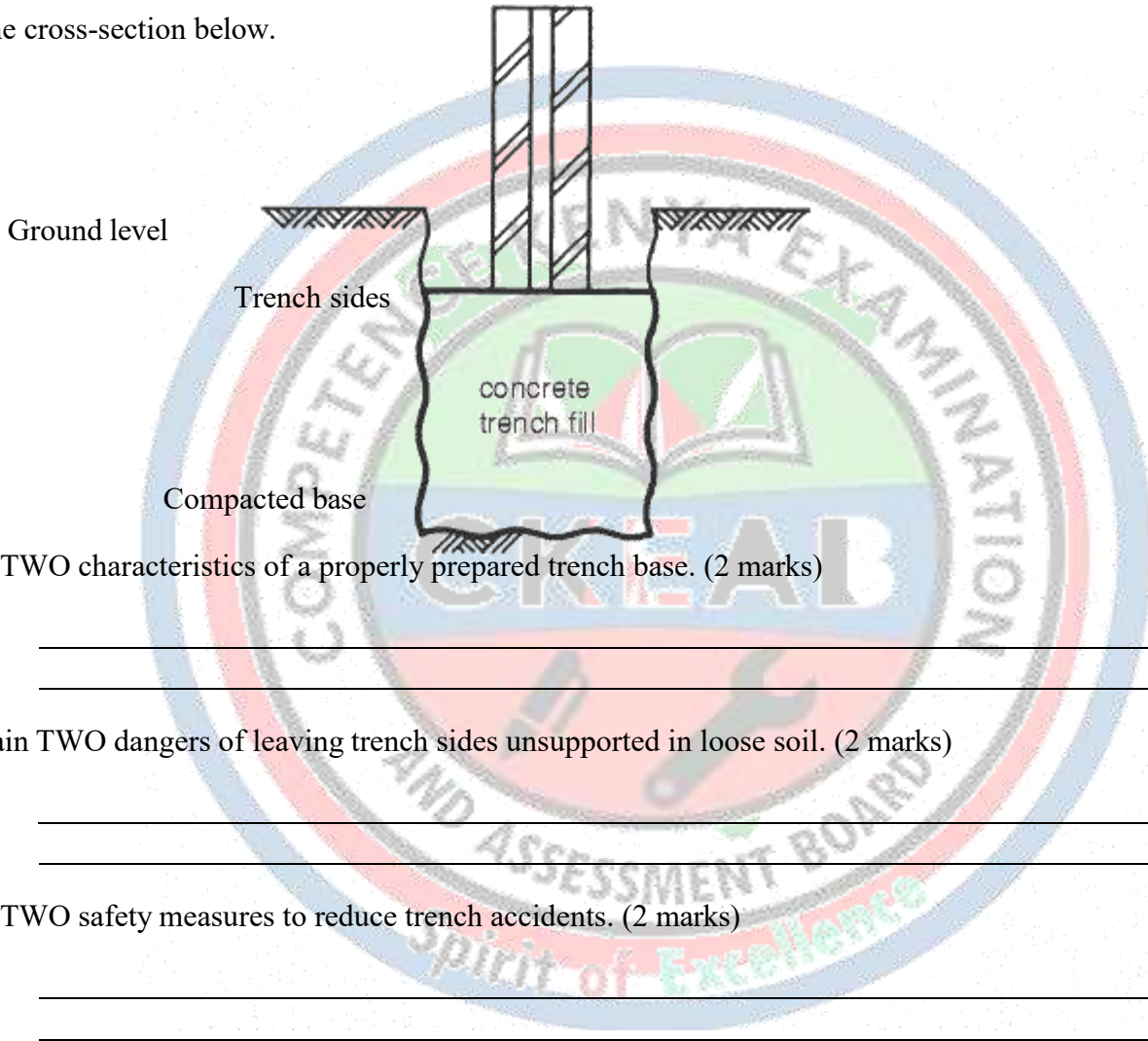
**15. (6 marks)**

Describe SIX steps followed when preparing a trench for strip foundation construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

**16. (6 marks)**

Study the cross-section below.



a) State TWO characteristics of a properly prepared trench base. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Explain TWO dangers of leaving trench sides unsupported in loose soil. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) State TWO safety measures to reduce trench accidents. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**17. (5 marks)**

Outline FIVE steps followed when laying a strip foundation using concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**18. (4 marks)**

Explain FOUR reasons why the foundation trench base must be compacted before placing concrete.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**19. (6 marks)**

Study the process diagram below.

Excavate → Align sides → Level base → Compact base → Place concrete → Cure

a) Identify the TWO steps done before concrete placement. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

b) Explain TWO reasons why concrete must be compacted. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

c) State TWO curing methods suitable for strip foundations. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**20. (5 marks)**

Explain FIVE safety precautions that must be observed during excavation and laying of foundations.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**21. (6 marks)**

A trench collapses while learners are working.

a) State THREE possible causes of trench collapse. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE measures that could prevent such accidents. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**22. (6 marks)**

A strip foundation is laid but cracks appear after one week.

a) Explain THREE possible causes of cracking. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE preventive measures for future work. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**23. (4 marks)**

Explain FOUR reasons why curing is important in foundation construction.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**24. (6 marks)**

A building site has weak soil and a high water table.

a) Suggest the most suitable shallow foundation type. (1 mark)

- \_\_\_\_\_
- \_\_\_\_\_

b) Explain THREE reasons for your choice. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

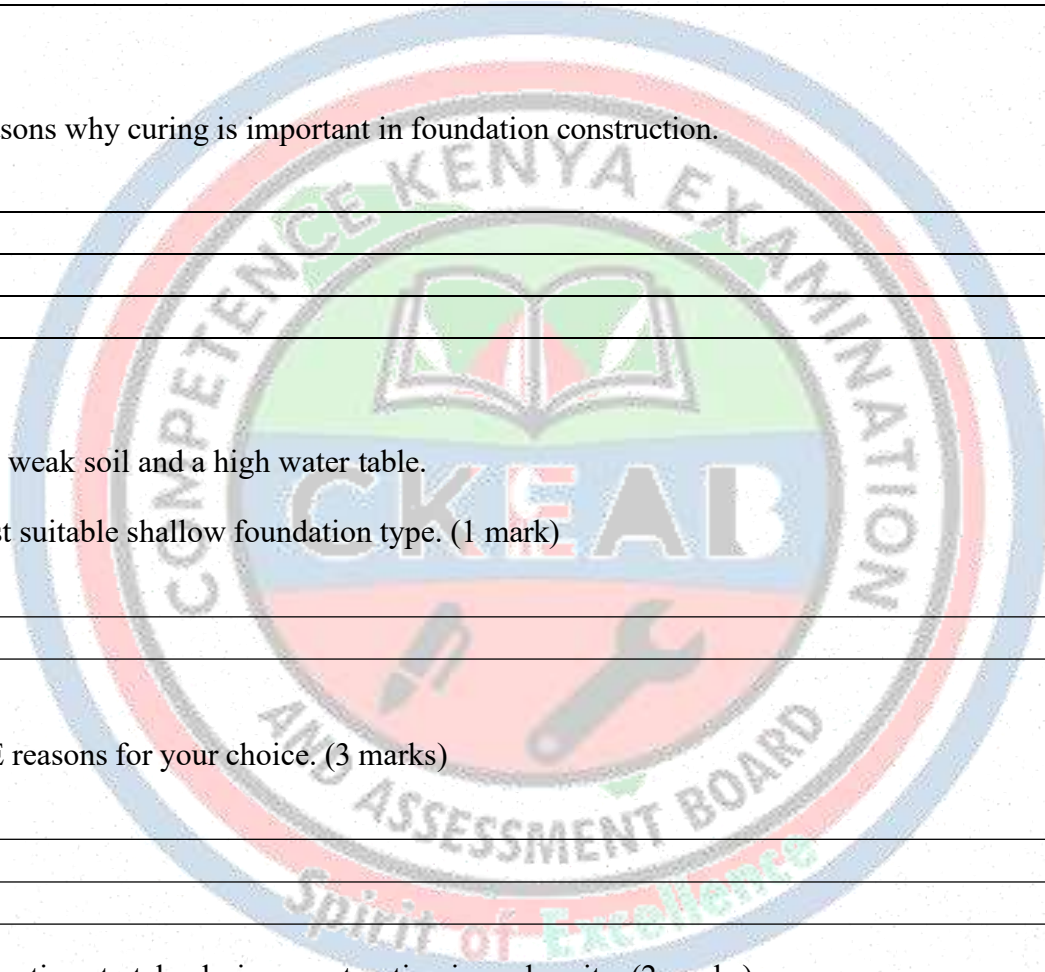
c) State TWO precautions to take during construction in such a site. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**25. (4 marks)**

Explain FOUR reasons why pad foundations are used in column-supported buildings.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_



**26. (3 marks)**

State THREE effects of constructing a building without a proper foundation.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**27. (5 marks)**

Explain FIVE ways foundations contribute to the stability and durability of a building.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**28. (6 marks)**

A Grade 10 class is to present on the importance of foundations.

a) Write THREE key points they should include. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b) Suggest THREE local examples of buildings where foundations are important. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**29. (6 marks)**

A strip foundation trench is **12 m long, 0.6 m wide**, and concrete thickness is **0.15 m**.

a) Calculate the volume of concrete required. (4 marks)

b) State TWO reasons why correct volume estimation is important. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**30. (6 marks)**

A learner claims:

“Foundations are only important for tall buildings.”

a) Do you agree or disagree? (1 mark)

---

---

b) Give FIVE reasons to support your answer. (5 marks)

- i. 

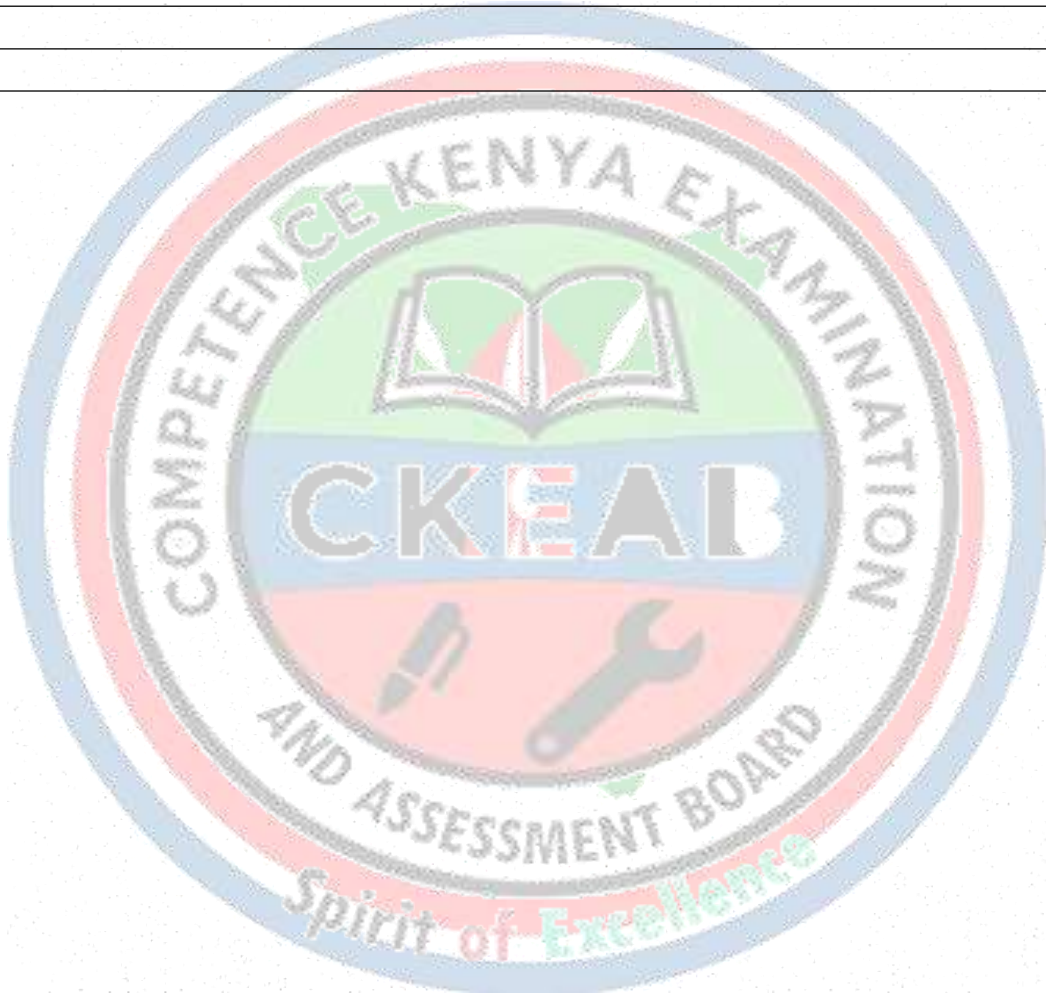
---
- ii. 

---
- iii. 

---
- iv. 

---
- v. 

---



**STRAND 3.0: BUILDING CONSTRUCTION PROCESSES**

**SUB-STRAND 3.4: FOUNDATION WALLING**

**SECTION A: (25 MARKS)**

1. Define the term foundation walling. (2 marks)

---

---

2. List FOUR materials used for foundation walling. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

3. State THREE common masonry units used in foundation walls. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

4. Name FOUR tools used for checking vertical accuracy (plumbness) during walling. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

5. State TWO functions of mortar in masonry wall construction. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

6. Identify THREE types of masonry bonds used in foundation walling. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

7. Name THREE tools used when applying mortar during foundation walling. (3 marks)

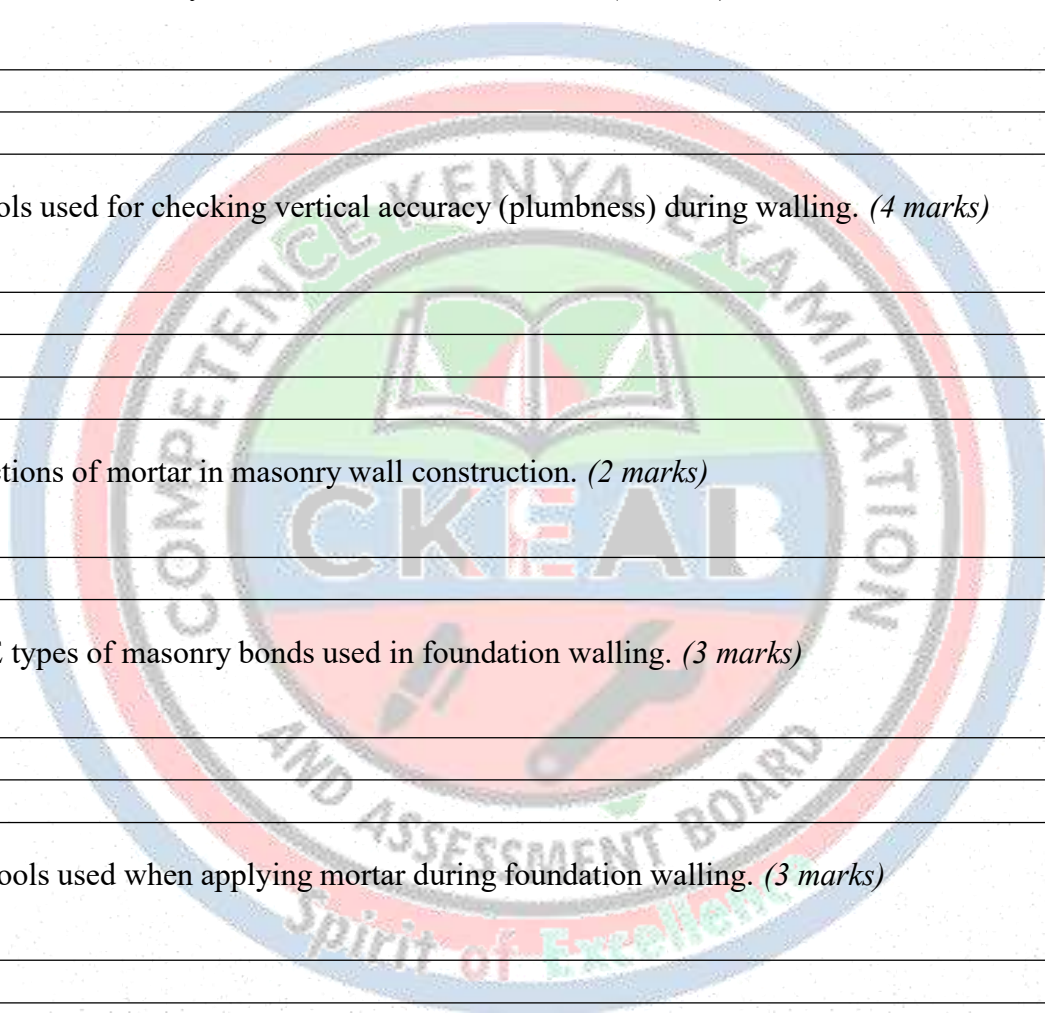
- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

8. State TWO safety items (PPE) required during foundation walling. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

9. Give TWO reasons why foundation walling should follow building code requirements. (2 marks)

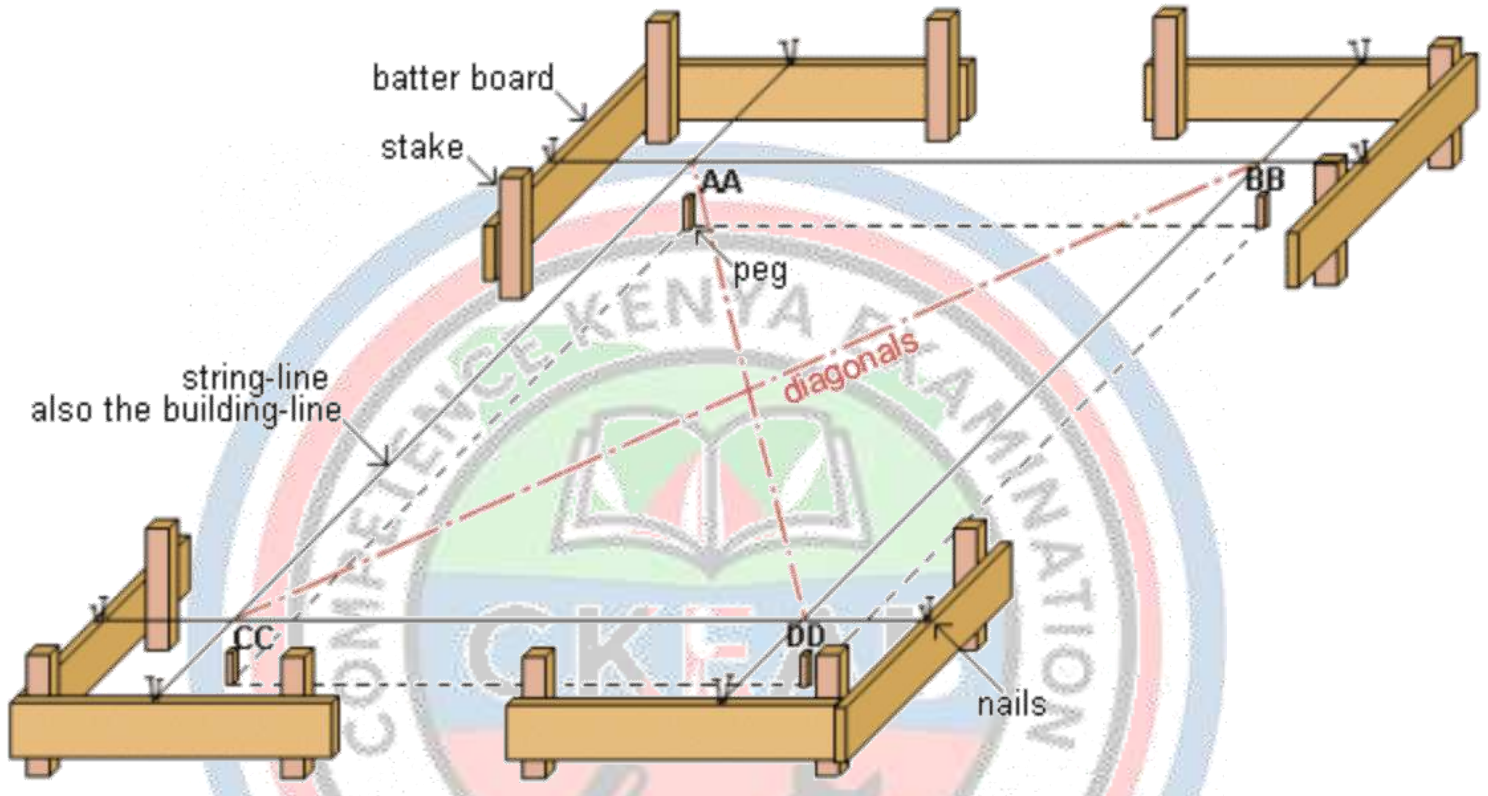
- i. \_\_\_\_\_
- ii. \_\_\_\_\_



10. Explain FIVE requirements for foundation walling according to building standards (building code). (5 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

11. Study the profile board arrangement below.



(a) What is the purpose of the builder's line in the diagram? (2 marks)

\_\_\_\_\_

\_\_\_\_\_

(b) State TWO reasons why profile boards must be firm and well-supported. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Explain how wall measurements are transferred from profile boards to the foundation. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**12. A learner is setting out a masonry wall on a foundation.**

Describe the correct procedure using the following steps:

**(a) Setting corner stones (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(b) Checking alignment (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(c) Checking squareness (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(d) Checking levelling (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(e) Checking plumbness (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**13. The diagram below shows a corner setting error.**



**(a) Identify the error shown in the wrong corner. (2 marks)**

- \_\_\_\_\_
- \_\_\_\_\_

**(b) Explain TWO causes of such an error during setting out. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(c) Give TWO effects of this error on the final wall. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

14. Explain FOUR ways of ensuring correct levelling of a foundation wall during construction. (8 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

15. The following tools are used in foundation walling:

- i. plumb bob
- ii. spirit level
- iii. water level
- iv. builder's square
- v. tape measure

(a) Match each tool with its correct function. (5 marks)

Tools	Function
i. Plumb bob	
ii. Spirit level	
iii. Water level	
iv. Builder's square	
v. Tape measure	

(b) Name these tools



16. Describe FOUR safety measures that must be observed when constructing foundation walls. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**17. Mortar is prepared for foundation walling.**

**(a) State THREE qualities of good mortar for masonry work. (3 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

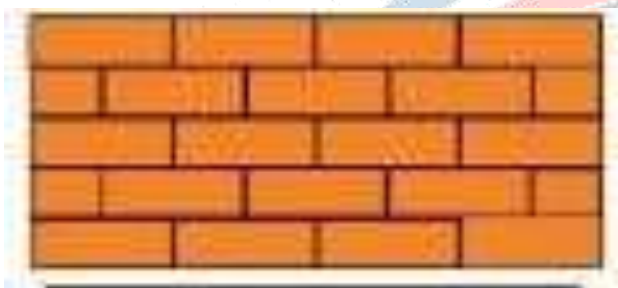
**(b) Explain TWO effects of using mortar that is too wet. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(c) Explain TWO effects of using mortar that is too dry. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**18. Study the bond diagram below.**



**(a) Identify the bond shown. (1 mark)**

\_\_\_\_\_

**(b) Explain why it is called a “stretcher” bond. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(c) State TWO advantages of this bond in foundation walling. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**19. Draw and label a neat elevation of ANY ONE of the following bonds: (6 marks)**

Header bond	Flemish bond	English bond

**20. A foundation wall is constructed using blocks.**

**(a) Explain TWO reasons why blocks may be preferred over bricks. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(b) State TWO disadvantages of using blocks in foundation walling. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**21. Explain the meaning of each of the following terms as used in masonry work:**

**(a) Course (2 marks)**

\_\_\_\_\_  
\_\_\_\_\_

**(b) Joint (2 marks)**

\_\_\_\_\_  
\_\_\_\_\_

**(c) Bond (2 marks)**

\_\_\_\_\_  
\_\_\_\_\_

**SECTION C: (25 MARKS)**

**22. A contractor set out a foundation wall but later discovered the wall was not square.**

**(a) Explain TWO methods that could have been used to ensure squareness during setting out. (4 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(b) Suggest THREE corrective actions that can be taken before walling continues. (3 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**23. The foundation wall shown below developed cracks after backfilling.**



**(a)** Give **THREE** possible causes of the cracks. *(3 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**(b)** Explain **TWO** ways backfilling could contribute to wall failure. *(4 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**24. A learner is instructed to build a masonry foundation wall in stretcher bond.**

**(a)** Explain **THREE** ways the learner can ensure the bond remains correct throughout the wall length. *(3 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**(b)** Evaluate why stretcher bond may not be suitable for very thick foundation walls. *(3 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**25. A school building project is in progress. The foundation wall must be built using stone.**

**(a)** State **TWO** advantages of using stones in foundation walling. *(2 marks)*

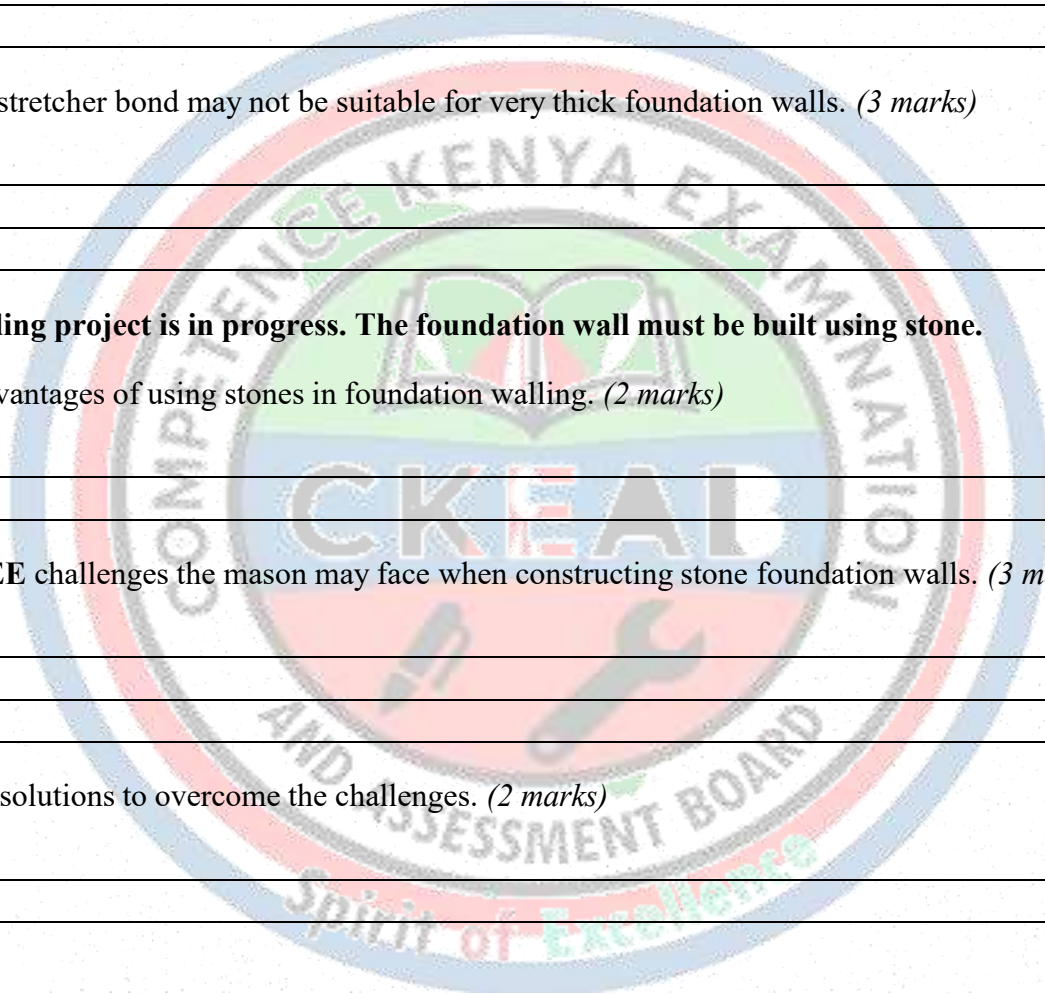
- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(b)** Explain **THREE** challenges the mason may face when constructing stone foundation walls. *(3 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**(c)** Suggest **TWO** solutions to overcome the challenges. *(2 marks)*

- i. \_\_\_\_\_
- ii. \_\_\_\_\_



**STRAND 3.0: BUILDING CONSTRUCTION PROCESSES**

**SUB-STRAND 3.5: GROUND FLOORS**

**SECTION A: (25 MARKS)**

1. Define the term ground floor. (2 marks)

---

---

2. Name TWO main types of ground floors used in buildings. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

3. State FOUR components of a solid ground floor. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

4. Identify THREE purposes of hardcore in a solid ground floor. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

5. What is the meaning of the term blinding in floor construction? (2 marks)

---

---

6. State TWO reasons why damp proofing is installed in a ground floor. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

7. Name THREE materials used for damp proofing a solid ground floor. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

8. State THREE tools that can be used during hardcore packing. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

9. List TWO safety precautions to observe when handling concrete during floor slab construction. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

10. State TWO reasons why curing is done after laying a floor slab. (2 marks)

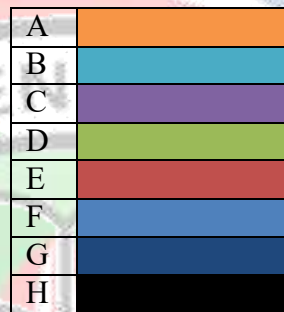
- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**SECTION B: (50 MARKS)**

11. Explain FIVE requirements of ground floors according to the building code. (5 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

12. Study the section below showing a solid ground floor.



Compacted soil    Floor finish    Concrete slab    BRC mesh    Damp proof membrane (DPM)    Blinding    Hardcore

(a) Identify layer G and state its main purpose. (2 marks)

- \_\_\_\_\_
- \_\_\_\_\_

(b) Explain why blinding is placed above hardcore. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) State TWO reasons why a DPM must overlap properly at joints. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(d) Give TWO reasons for using BRC mesh in the slab. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**13. Describe the correct procedure for constructing a solid ground floor in the following stages:**

**(a) Hardcore packing (2 marks)**

---

---

**(b) Blinding (2 marks)**

---

---

**(c) Termite treatment (2 marks)**

---

---

**(d) Damp proofing (2 marks)**

---

---

i.

---

---

**(e) Placement of BRC reinforcement (2 marks)**

---

---

**14. Explain FOUR differences between a solid ground floor and a suspended ground floor. (8 marks)**

i.

---

---

ii.

---

---

iii.

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---

iv.

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v.

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**15. A learner forgot to treat the ground for termites before laying the slab.**

**(a) Explain THREE possible effects of skipping termite treatment. (3 marks)**

i.

---

---

ii.

---

---

iii.

---

---

**(b) Suggest TWO corrective actions that can be taken in future construction. (2 marks)**

i.

---

---

ii.

---

---

**16. Explain FOUR safety measures to observe during construction of a solid ground floor. (4 marks)**

i.

---

---

ii.

---

---

iii.

---

---

iv.

---

---

17. The diagram below shows wall paint and concrete peeling off a wall.



(a) Identify why the situation shown occurred. (2 marks)

---

---

(b) Explain TWO effects of this mistake on the ground floor. (4 marks)

- i. 

---
- ii. 

---

18. Describe THREE methods of compacting hardcore during floor construction. (6 marks)

- i. 

---
- ii. 

---
- iii. 

---

19. Explain FOUR signs that indicate concrete slab curing is being done properly. (4 marks)

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---

20. State and explain the function of the following in a solid ground floor:

(a) Floor slab (2 marks)

---

---

(b) Blinding (2 marks)

---

---

(c) Damp proof membrane (2 marks)

---

---

(d) Hardcore (2 marks)

---

---

**SECTION C: (25 MARKS)**

**21. A floor slab developed cracks one week after construction.**

(a) Give **FOUR** possible causes of cracking in a solid ground floor. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

(b) Explain **THREE** ways to prevent such cracks in future construction. (6 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**22. A contractor wants to build a solid ground floor in an area with a high water table.**

(a) Explain **THREE** challenges that may occur during construction. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

(b) Suggest **FOUR** suitable solutions to ensure the floor remains dry and strong. (8 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**23. A school is constructing classrooms and must choose between a solid floor and a suspended floor.**

(a) Give **TWO** reasons why a solid ground floor may be preferred. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(b) Give **TWO** reasons why a suspended floor may be preferred. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**STRAND 4.0: BUILDING SERVICES**

**SUB-STRAND 4.1: PLUMBING SERVICES – TOOLS & EQUIPMENT**

**SECTION A: (25 MARKS)**

1. Define the term plumbing tool. (2 marks)

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2. State TWO uses of tools and equipment in plumbing works. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

3. Name the plumbing tool used for each task below: (6 marks)

- (a) Cutting a pipe: \_\_\_\_\_
- (b) Holding a pipe firmly on a bench: \_\_\_\_\_
- (c) Turning a threaded pipe fitting: \_\_\_\_\_
- (d) Removing burrs inside a cut pipe: \_\_\_\_\_
- (e) Bending a pipe smoothly: \_\_\_\_\_
- (f) Cutting external threads on a pipe: \_\_\_\_\_

4. List FOUR plumbing tools used for pipe preparation and finishing. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

5. State THREE personal protective equipment (PPE) used in plumbing workshop practice. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

6. Name TWO tools used for tightening and loosening pipes and fittings. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

7. What is the function of a reamer in plumbing works? (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

8. State TWO reasons why tools should be cleaned after use. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

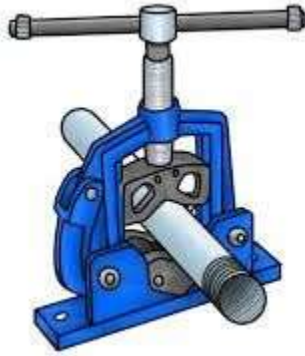
9. Name TWO maintenance practices carried out on plumbing tools. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**10. Explain FIVE safety measures to observe when handling plumbing tools and equipment. (5 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

**11. Study the diagram below.**



**(a) Identify the tool shown. (1 mark)**

**(b) State TWO uses of the tool. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(c) Explain TWO safety precautions when using this tool. (4 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**12. A learner is required to cut a 25 mm GI pipe.**

**(a) Name the best tool for cutting the pipe. (1 mark)**

**(b) Describe the correct steps for cutting the pipe neatly. (4 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**(c) Explain why reaming should be done immediately after cutting. (2 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**13. Describe how the following tools are used in plumbing:**

**(a) Pipe wrench (2 marks)**

---

---

(b) Die stock (2 marks)

---

---

(c) Pipe bender (2 marks)

---

---

i.

(d) File (2 marks)

---

---

14. Explain the difference between the function of:

(a) A pipe cutter and a hacksaw (4 marks)

---

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---

---

(b) A pipe wrench and an adjustable spanner (4 marks)

---

---

---

---

15. Study the diagram below.



M



N

(a) Identify the tool M shown. (1 mark)

---

(b) State the main function of this tool. (2 marks)

---

---

---

(c) Name **TWO** materials (pipes) that may require threading. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(d) Explain **TWO** safety measures to observe when using it. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

16. Explain **FOUR** reasons why tools must be stored properly after use. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

17. A learner bends a pipe and it becomes flattened.

(a) Give **TWO** reasons why the pipe may have flattened. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(b) Suggest **TWO** ways to prevent flattening during bending. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

18. Describe the correct care and maintenance procedure for:

(a) Pipe wrench (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(b) Pipe cutter (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Reamer (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**SECTION C: (25 MARKS)**

19. A plumbing workshop has only one pipe vice. Learners start holding pipes using their feet while cutting.

(a) Explain **THREE** dangers of this practice. (6 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**(b)** Suggest **THREE** safe alternatives the teacher can implement immediately. (6 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**20.** A school plumber notices that the die stock produces poor threads and the fittings leak.

**(a)** Give **THREE** possible causes of poor threading. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

**(b)** Suggest **FOUR** corrective measures to ensure proper threading. (8 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

**21.** A plumbing student insists that tool maintenance is unnecessary because “tools are strong”.

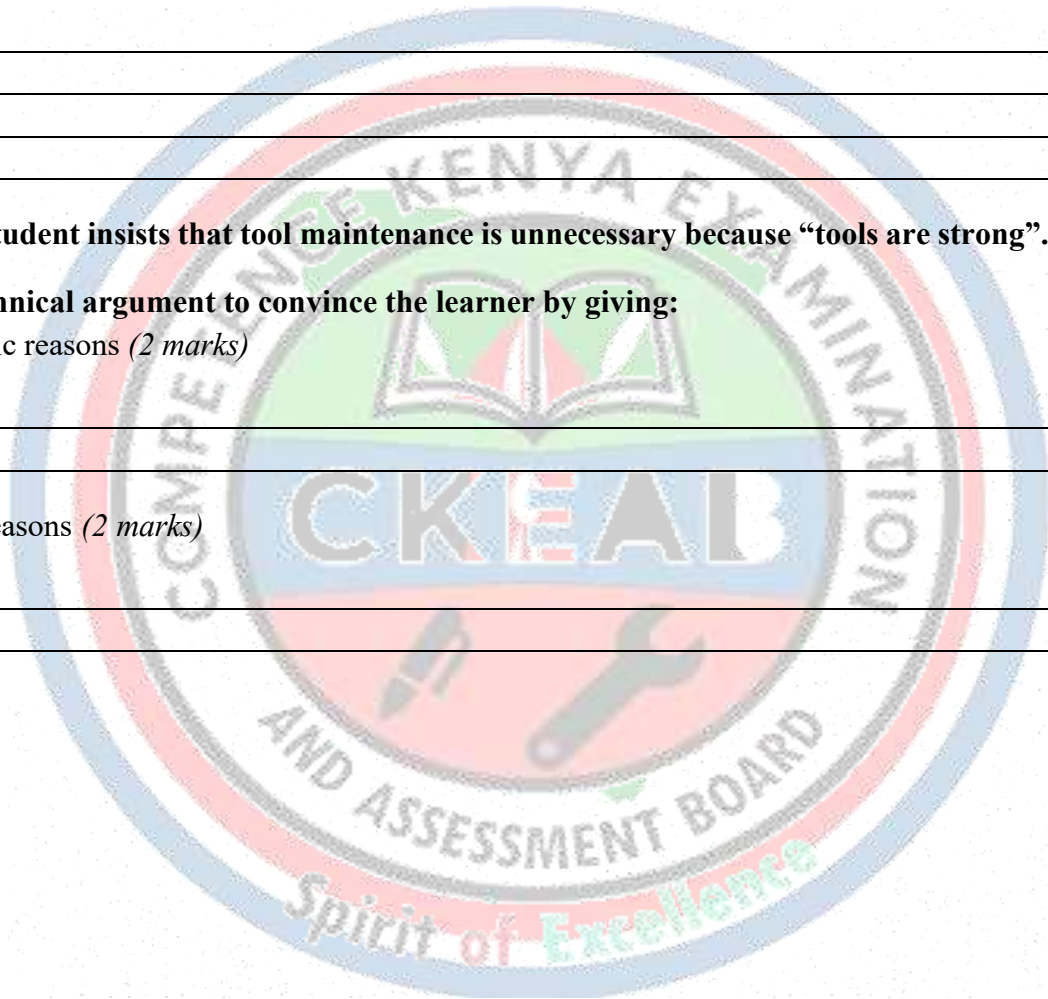
**Write a short technical argument to convince the learner by giving:**

**(a)** **TWO** economic reasons (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**(b)** **TWO** safety reasons (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_



**STRAND 4.0: BUILDING SERVICES**  
**SUB-STRAND 4.2: PLUMBING MATERIALS**  
**SECTION A: (25 Marks)**

1. Define the term plumbing material. (2 marks)

---

---

2. List FOUR types of materials commonly used in plumbing. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

3. State TWO uses of plastic pipes in plumbing works. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

4. Give TWO properties of metal pipes that make them suitable for plumbing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

5. Name the material suitable for the following plumbing purposes: (4 marks)

- (a) Wastewater drainage : \_\_\_\_\_
- (b) Hot water supply: \_\_\_\_\_
- (c) Sanitary fittings (sinks, basins) : \_\_\_\_\_
- (d) External water supply: \_\_\_\_\_

6. State TWO advantages of using PVC pipes in plumbing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

7. Identify the material that is: (3 marks)

- (a) Corrosion-resistant and lightweight: \_\_\_\_\_
- (b) Brittle but heat-resistant: \_\_\_\_\_
- (c) Ductile and malleable: \_\_\_\_\_

8. Name TWO materials used for concrete plumbing products. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

9. Give TWO reasons why ceramic pipes are still used in certain plumbing applications. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

10. Explain FIVE factors to consider when selecting plumbing materials for a given installation. (5 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_

11. Study the diagram below:



(a) Identify the material. (1 mark)

\_\_\_\_\_

(b) List TWO advantages of using this material for cold water supply. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Suggest TWO maintenance practices for the pipe. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

12. Classify the following materials according to their type in plumbing: (6 marks)

Materials: Copper, PVC, Concrete, Ceramic, Brass, Cast iron

- (a) Metals: \_\_\_\_\_
- (b) Plastics: \_\_\_\_\_
- (c) Ceramics: \_\_\_\_\_
- (d) Concrete: \_\_\_\_\_

13. A plumber wants to install a hot water supply system. Answer the questions below: (6 marks)

(a) Which material is most suitable?

\_\_\_\_\_  
\_\_\_\_\_

(b) Give TWO reasons for your choice.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) State **TWO** properties of the material that suit hot water plumbing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**14. Explain the following terms as used in plumbing materials: (6 marks)**

(a) Corrosion

\_\_\_\_\_  
\_\_\_\_\_

(b) Ductility

\_\_\_\_\_  
\_\_\_\_\_

(c) Thermal conductivity

\_\_\_\_\_  
\_\_\_\_\_

**15. (a) Match the plumbing material to its property or use: (6 marks)**

Material	Property
Copper	
PVC	
Concrete	
Ceramic	
Steel	
Brass	

(b) Mention the use of the following plumbing material

- i. Copper: \_\_\_\_\_
- ii. PVC: \_\_\_\_\_
- iii. Ceramic: \_\_\_\_\_
- iv. Brass : \_\_\_\_\_

**16. A plumbing student is asked to select materials for a new residential building. Suggest materials for the following applications and give reasons: (6 marks)**

(a) Cold water supply: \_\_\_\_\_

(b) Hot water supply: \_\_\_\_\_

(c) Drainage system: \_\_\_\_\_

**17. Describe THREE environmental factors that influence the choice of plumbing materials. (3 marks)**

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

18. Explain the importance of selecting correct materials in plumbing. Give FOUR reasons. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

19. Identify TWO plumbing materials that are: (3 marks)

(a) Recyclable

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(b) Non-recyclable

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Resistant to chemical corrosion

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

SECTION C: (25 Marks)

20. A plumber notices repeated leaks in a metal pipe water supply.

(a) List THREE possible causes related to material selection. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

(b) Suggest FOUR corrective measures to prevent leaks in future installations. (8 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

21. A client asks you to select plumbing materials for a new industrial kitchen. Discuss your choice using properties, durability, and maintenance requirements. (6 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_
- v. \_\_\_\_\_
- vi. \_\_\_\_\_

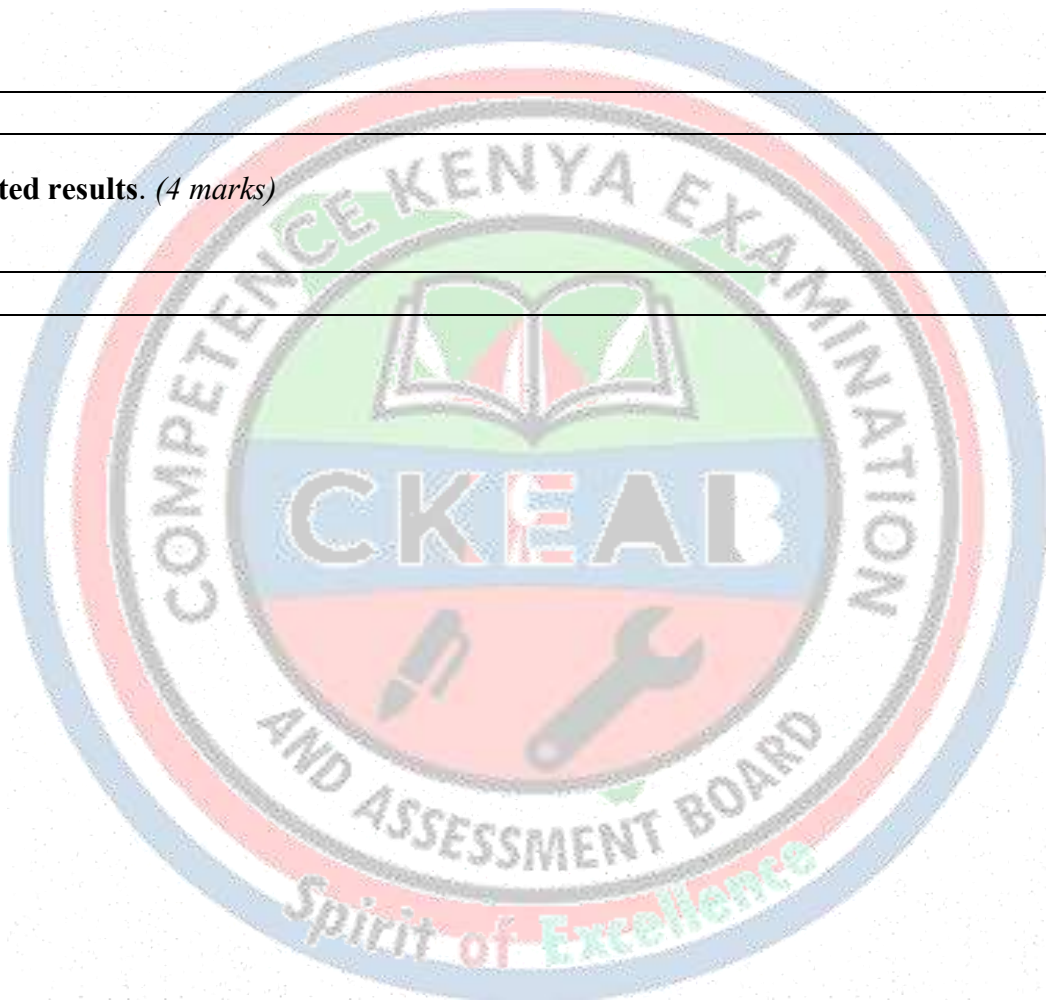
22. The school plumbing workshop wants to demonstrate material properties.

(a) Design an experiment to show ductility of a metal pipe. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(b) Explain expected results. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_



**STRAND 4.0: BUILDING SERVICES**

**SUB-STRAND 4.3: PIPEWORK**

**SECTION A: (25 Marks)**

1. Define the term **pipework** in plumbing. (2 marks)

---

---

2. List **FOUR types of pipes** commonly used in plumbing. (4 marks)

- i. 

---
- ii. 

---
- iii. 

---
- iv. 

---

3. State **TWO uses of elbow fittings** in plumbing systems. (2 marks)

- i. 

---
- ii. 

---

4. Identify **TWO tools used** for pipe cutting in plumbing. (2 marks)

- i. 

---
- ii. 

---

5. Name the type of pipe suitable for: (3 marks)

(a) Hot water supply

---

---

(b) Wastewater drainage

---

---

(c) Compressed air systems

---

---

6. Give **TWO advantages of using PVC pipes** over metal pipes. (2 marks)

- i. 

---
- ii. 

---

7. Identify **TWO types of joints** used in plumbing. (2 marks)

- i. 

---
- ii. 

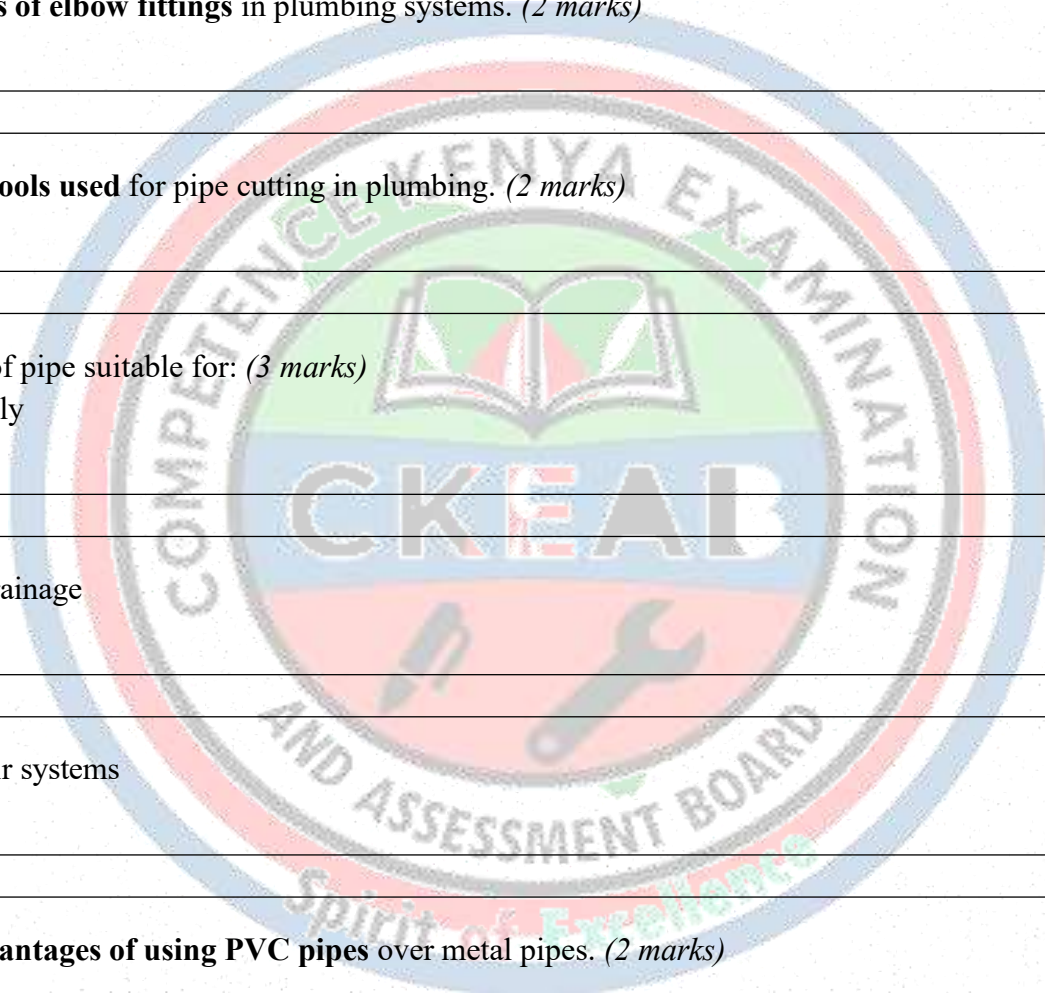
---

8. State **TWO safety precautions** when performing pipework. (2 marks)

- i. 

---
- ii. 

---



9. Name **TWO** types of couplings used in pipe connections. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

10. List **TWO** reasons why proper pipework is important in plumbing. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

**SECTION B: (50 Marks)**

11. Study the diagram below showing a **T-joint**:



(a) Identify the type of fitting. (1 mark)

\_\_\_\_\_

(b) State **TWO** uses of a T-joint in plumbing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Suggest **TWO** safety measures when installing this joint. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

12. Classify the following plumbing fittings according to type: (6 marks)

**Fittings:** Elbow, Tee, Reducer, Coupling, Union, Cap

(a) Directional: \_\_\_\_\_

(b) Joining: \_\_\_\_\_

(c) End closure: \_\_\_\_\_

13. Explain **FOUR** steps involved in preparing a pipe joint in plumbing. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

14. Describe **TWO** types of pipe bending methods and state their applications. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

15. A plumber is tasked to install a water supply system using metal pipes. Answer the questions: (6 marks)

(a) Suggest the type of joint suitable for metal pipes.

\_\_\_\_\_

\_\_\_\_\_

(b) List **TWO** tools required for making the joint.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) State **TWO** precautions to observe while jointing.

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

16. Study the diagram showing a 90° elbow in a pipeline:



(a) Identify the fitting. (1 mark)

\_\_\_\_\_

(b) Explain its purpose in plumbing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

(c) Name **TWO** types of materials the elbow can be made from. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

17. Match the pipe type to its common application: (6 marks)

Pipe Type	Application
PVC	
Copper	
Galvanized Steel	
Cast Iron	
PEX	
HDPE	

18. Explain **TWO** reasons why proper pipe alignment is important in plumbing. (2 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

19. A plumber wants to bend a pipe to a 45° angle. Outline the steps they would follow using a pipe bending tool. (4 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

20. Explain **TWO** differences between threaded and welded pipe joints. (4 marks)

	Threaded joints	Welded joints
i		
ii		

**SECTION C: (25 Marks)**

21. A client complains of leaks in a recently installed plumbing system.

(a) List **THREE** possible causes related to pipe joints. (3 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

(b) Suggest **FOUR** corrective measures to prevent future leaks. (8 marks)

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

22. PVC and Copper Pipes (6 marks)

(a) State two advantages of using **PVC** pipes in water supply systems. (2 marks)

- (i) \_\_\_\_\_
- (ii) \_\_\_\_\_

(b) State two advantages of using **copper** pipes in water supply systems. (2 marks)

- (i) \_\_\_\_\_
- (ii) \_\_\_\_\_

(c) State two factors to consider when selecting pipes for a high-rise building water supply. (2 marks)

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

### 23. Pipe Bending Demonstration (8 marks)

The school plumbing workshop plans to demonstrate pipe bending.

(a) Name two methods used to bend PVC pipes without cracking. (2 marks)

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(b) State two tools or materials used when bending PVC pipes. (2 marks)

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(c) State two safety measures that should be observed when bending pipes. (2 marks)

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

(d) Match the PVC pipe terms in Column A with the correct meaning/use in Column B.

Column A	Column B
i. PVC	A. Used to join two pipes in a straight line
ii. Solvent cement	B. A plastic pipe used for water supply and drainage
iii. Elbow	C. Adhesive used to bond PVC fittings
iv. Coupling	D. Used to change direction of pipe flow
v. Tee fitting	E. Used to connect a branch line to the main pipe

THIS IS THE FIRST EDITION

MORE IMPROVEMENTS WILL BE MADE FROM TIME TO TIME

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