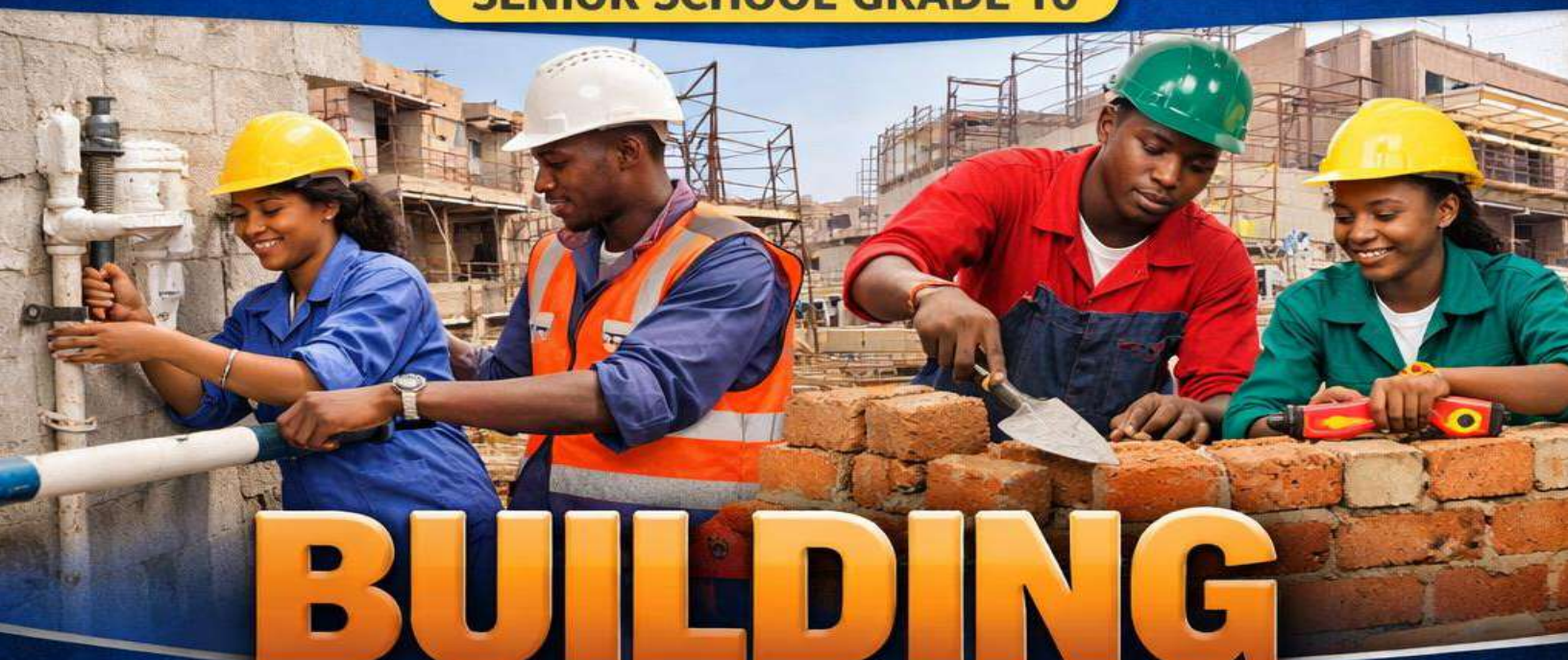
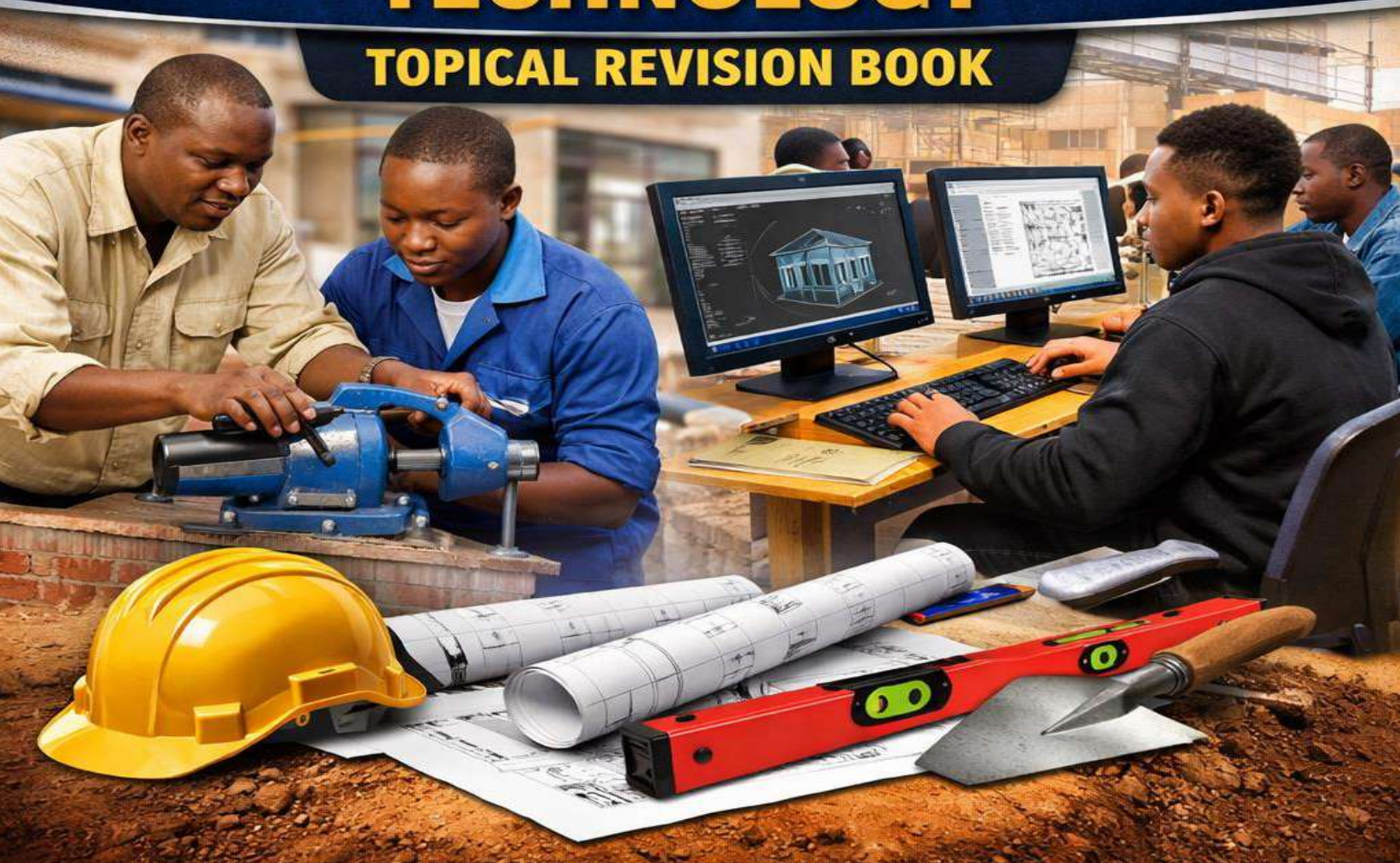
COMPETENCE BASED EDUCATION

SENIOR SCHOOL GRADE 10



BUILDING CONSTRUCTION TECHNOLOGY

TOPICAL REVISION BOOK



STRAND 1.0 (FOUNDATION OF BUILDING CONSTRUCTION)

SUB-STRAND: 1.1 INTRODUCTION TO BUILDING CONSTRUCTION

1. (2 marks)

Define the term **building**.

_____

_____

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)

_____
_____
_____
_____

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)

_____
_____

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)

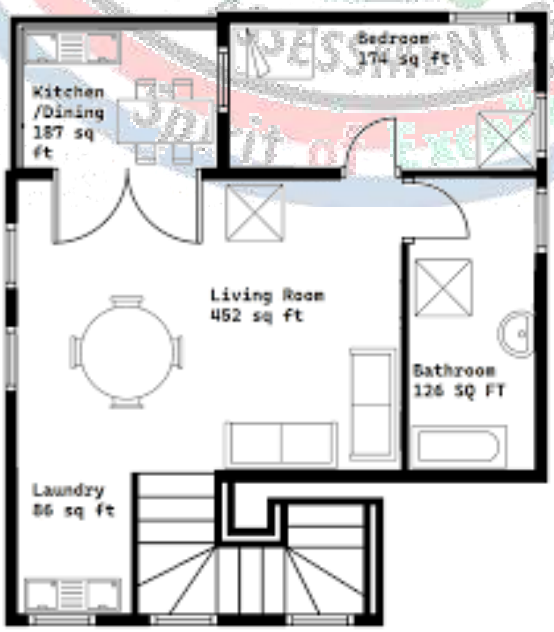
i. _____
ii. _____

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

TOPICAL ASSESSMENT: STRAND 1.0 FOUNDATION

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)

site clearing	**topsoil stripping**

b) Tools used (2 marks)

site clearing	**topsoil stripping**

c) Purpose (2 marks)

site clearing	**topsoil stripping**

11. (6 marks)

Study the diagram below.

W

X

Y

Z

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)

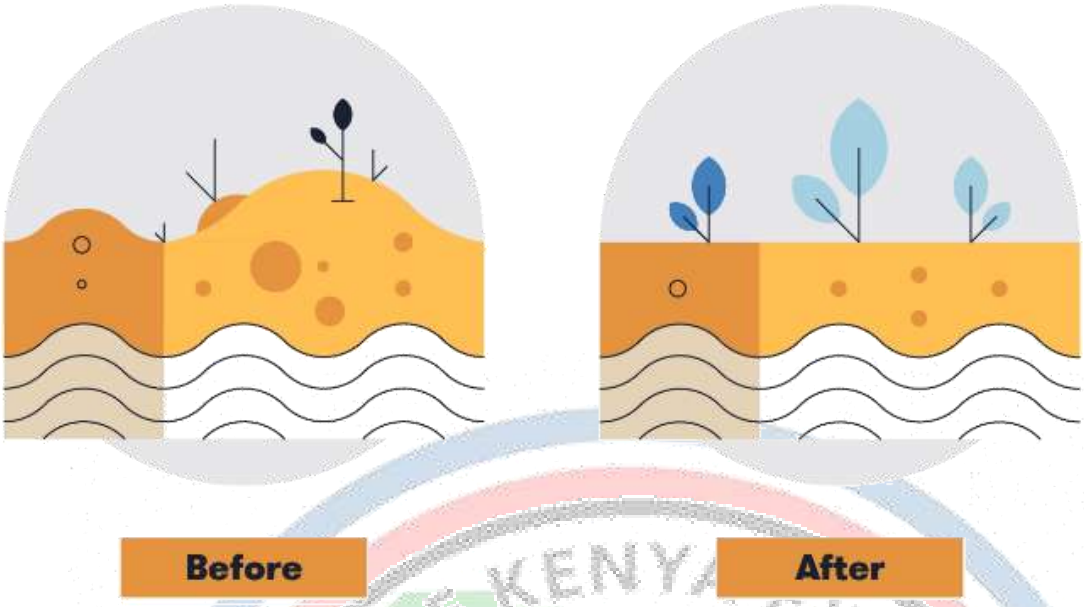
i. _____
ii. _____

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

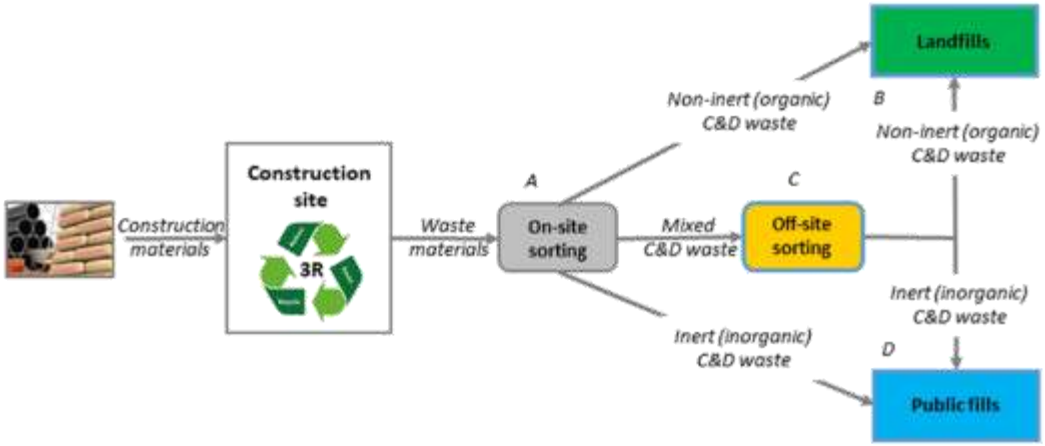
i. _____
ii. _____

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. _____

BUILDING CONSTRUCTION TECHNOLOGY

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)

_____

_____

6. (4 marks)

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

i. _____

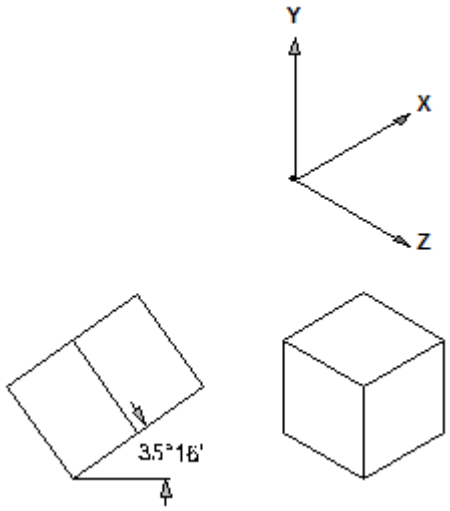
ii. _____

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

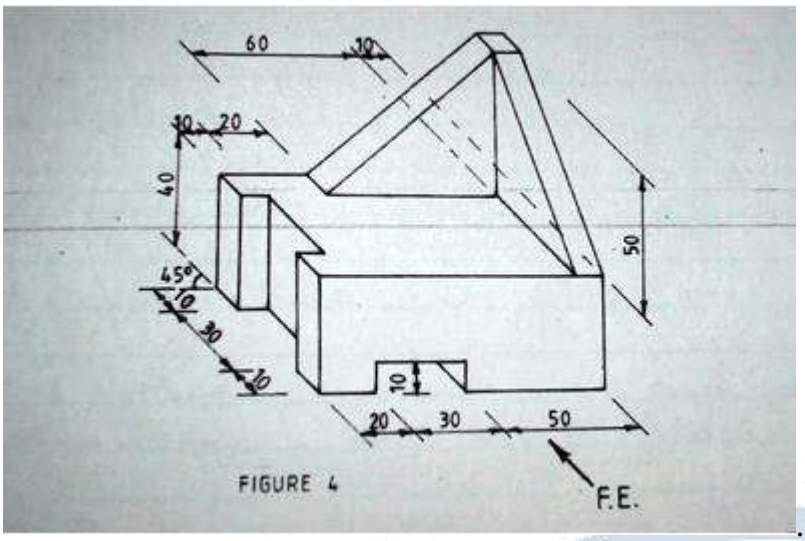


FIGURE 4

.

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)

_____
_____

b) Measuring accurately (2 marks)

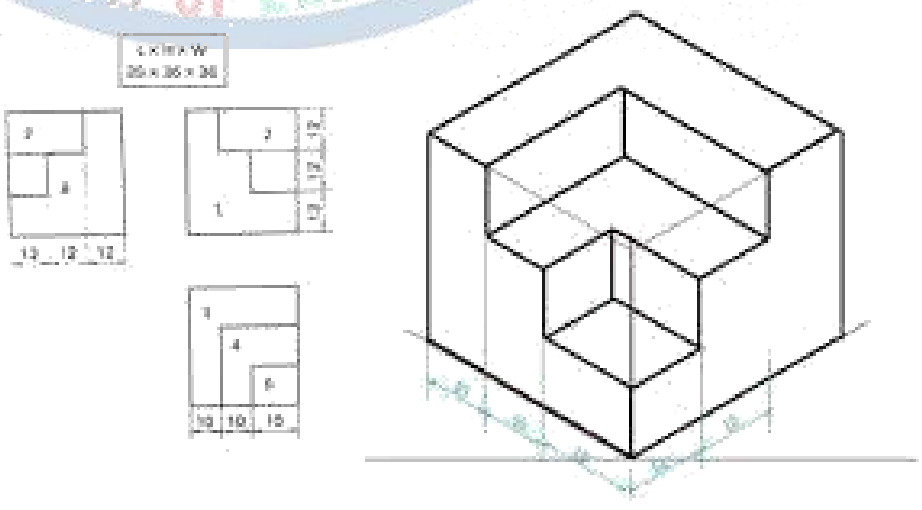
_____
_____

c) Avoiding material wastage (2 marks)

_____
_____

22. (8 marks)

(a) Study the stepped block below.



a) Identify the type of shaped block. (1 mark)

_____

b) State THREE areas where dimensions are needed on this block. (3 marks)

i. _____
ii. _____
iii. _____

c) Explain TWO challenges a learner may face when drawing this block. (2 marks)

i. _____
ii. _____

d) Suggest TWO solutions to the challenges. (2 marks)

i. _____
ii. _____

(b) The figure below shows a shaped block drawn in isometric projection

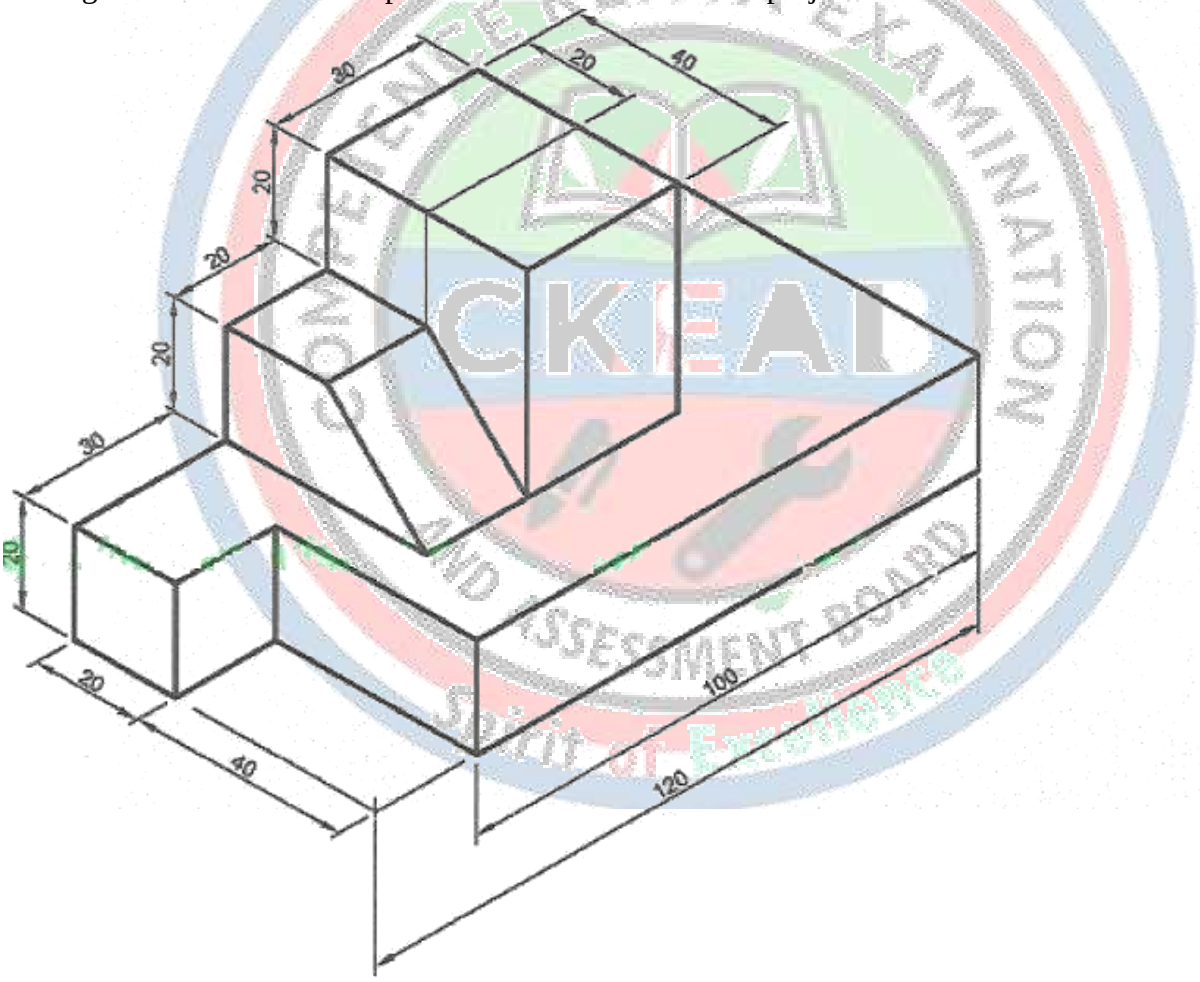


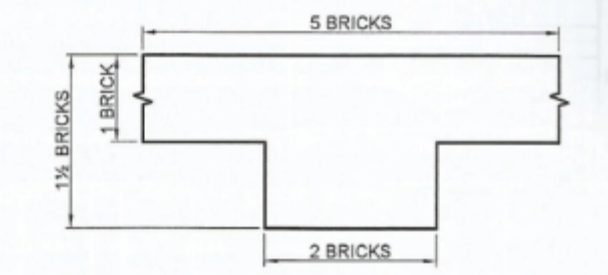
Figure 2

a. Draw the **three** orthographic views of the block **Full Size** in first angle projection. (11 marks)

b. Include **four** major dimensions. (4 marks)

(c)

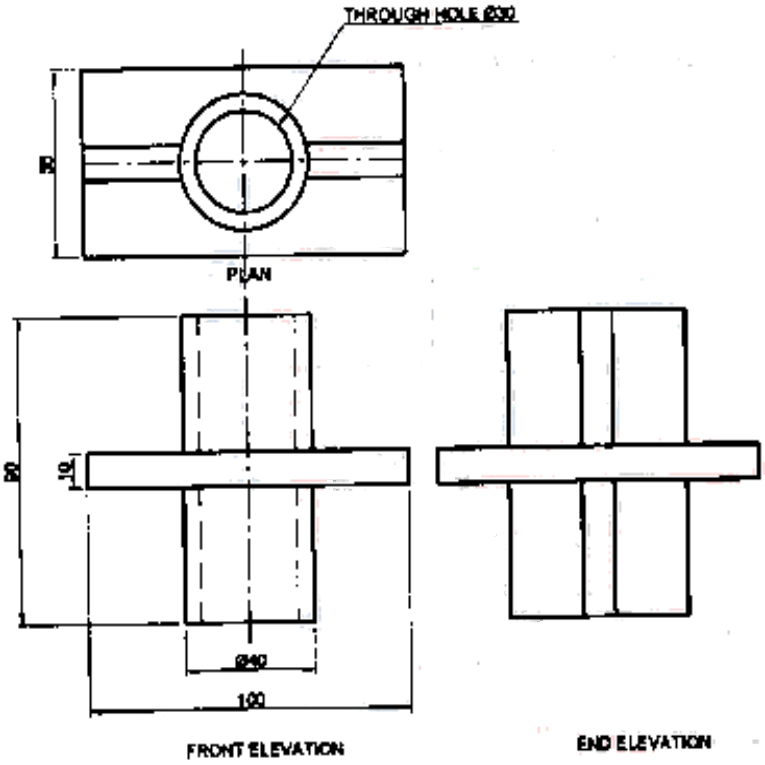
i. The figure shows a one brick thick wall with an attached pier in English bond. Sketch the plans of two alternate courses to show the bonding details at the pier. (6 marks)



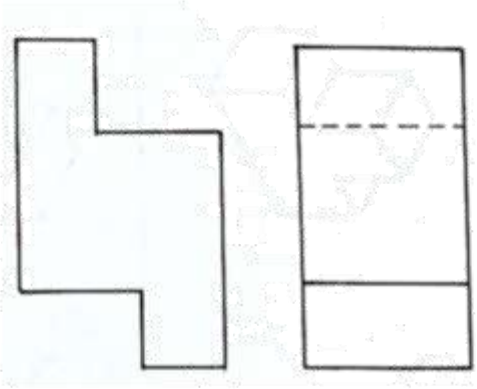
ii. Sketch and label a deep strip foundation. (4 marks)

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)

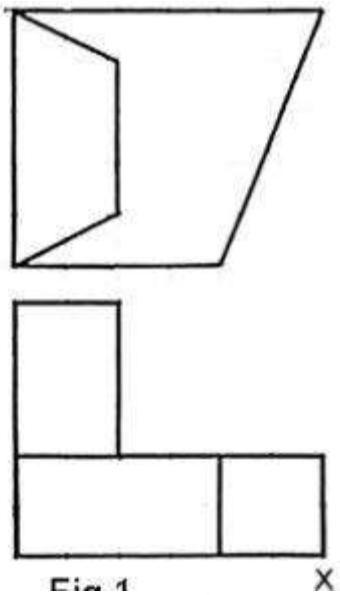


Fig 1

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

a) Front elevation (viewed in direction of arrow X)

b) End elevation (viewed from the right side)

c) Plan view (viewed from the top)

Requirements:

a) Draw to a scale of **1:1 (Full Size).**

b) Add **six (6) key dimensions** to your drawing.

c) 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)**.

_____

_____

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. _____

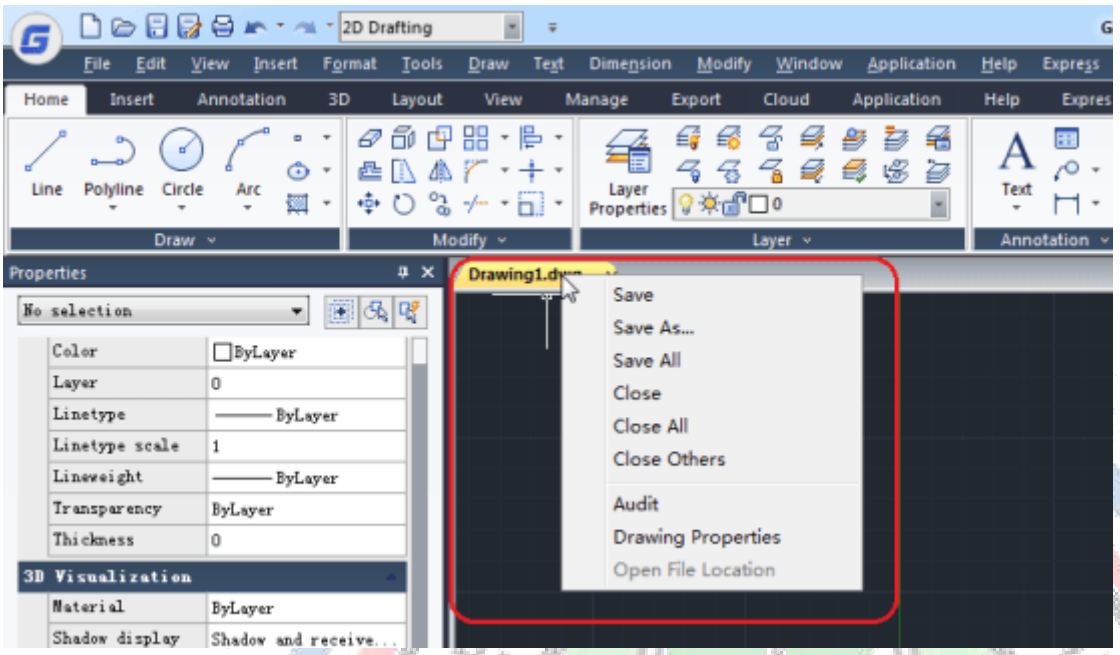
iii. _____

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)

_____

_____

_____

_____

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**.

_____

_____

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	**LIST B**
1. Wheelbarrow	A. Finishing the surface of concrete
2. Shovel	B. Carrying concrete mixture
3. Rake	C. Leveling and spreading concrete
4. Trowel	D. Scooping materials during mixing
5. Head pan	E. Transporting concrete to the site
6. Wooden float	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?

_____

_____

_____

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)

_____

_____

_____

_____

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. _____

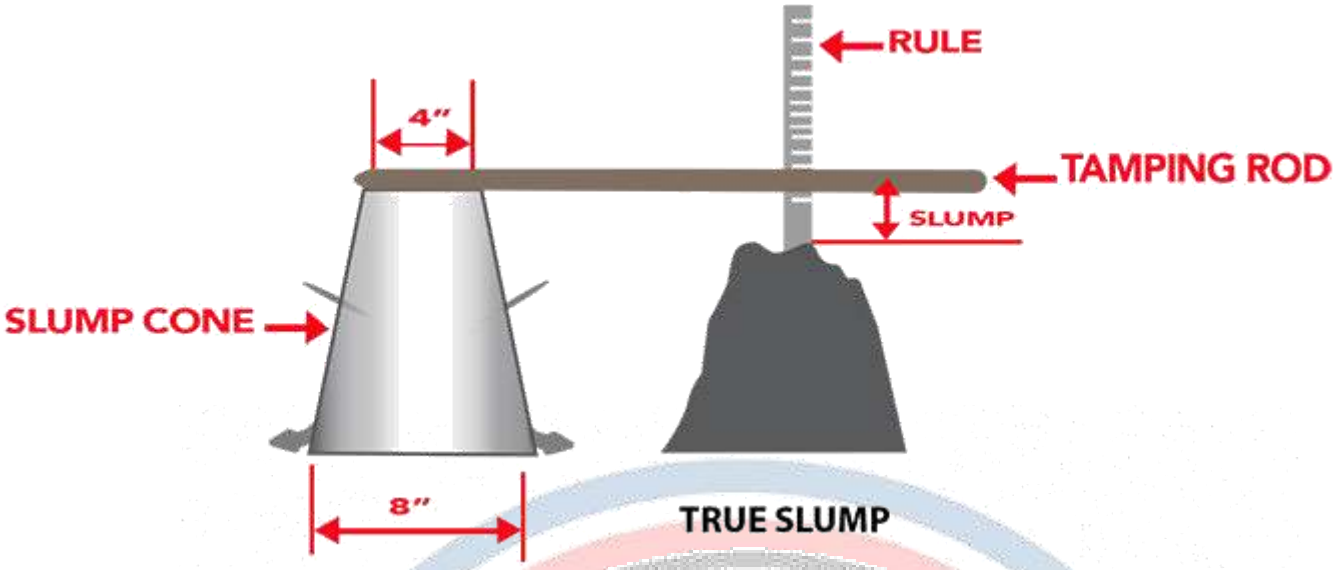
17. (5 marks)

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. _____

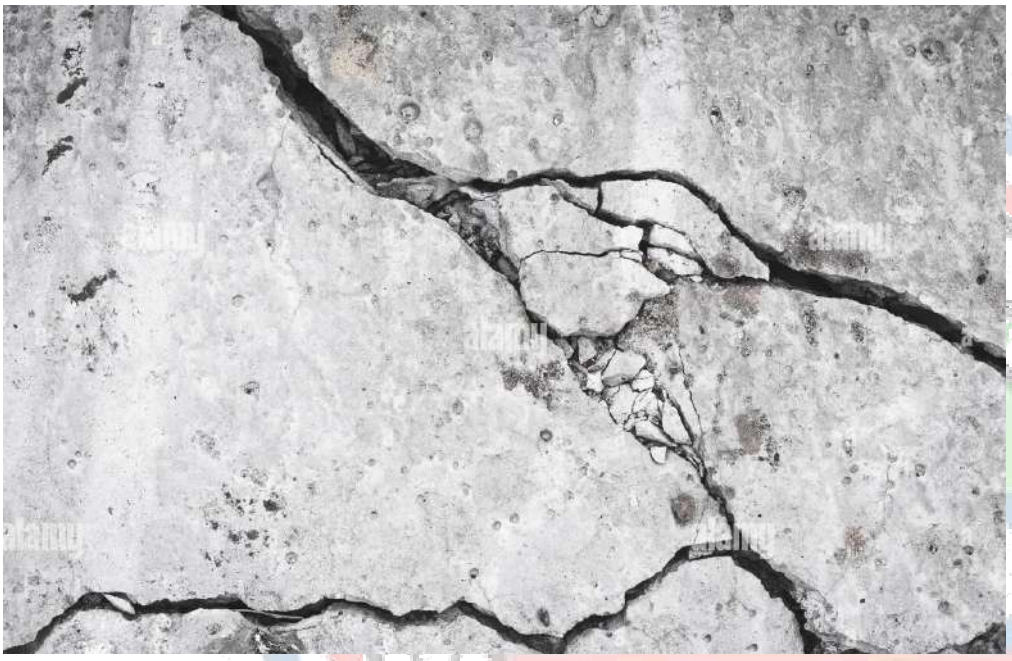
21. (6 marks)

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. _____

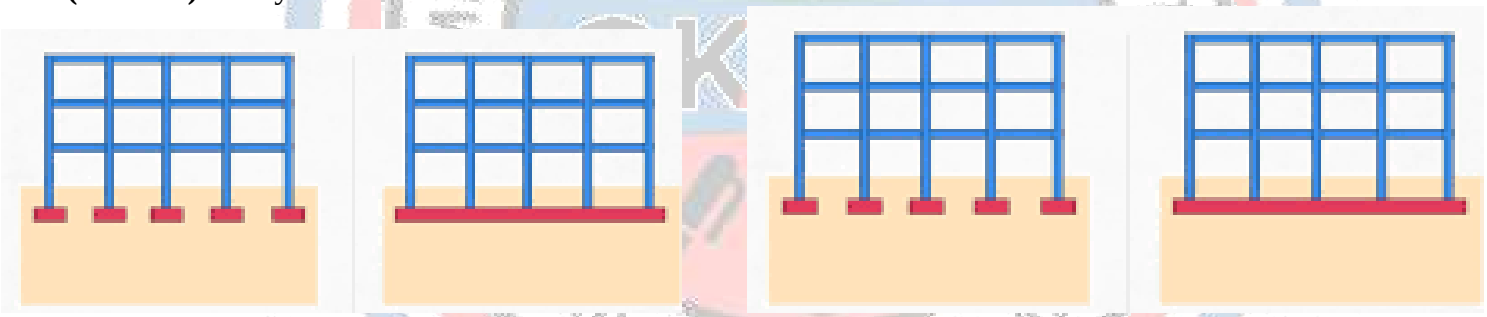
4. (3 marks) State THREE types of shallow foundations used in building construction.

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)

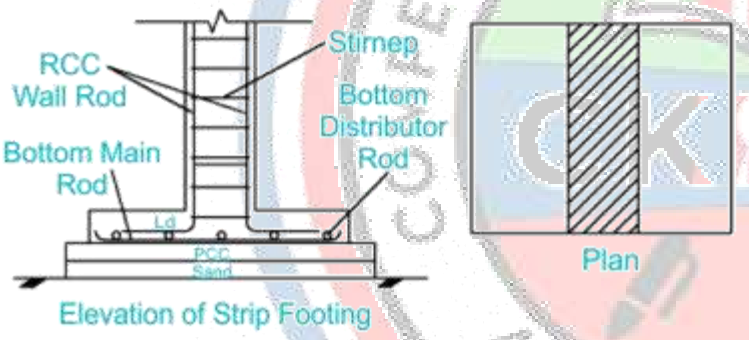
i. _____
ii. _____
iii. _____

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

_____

| | |

| | |

| 4000 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.

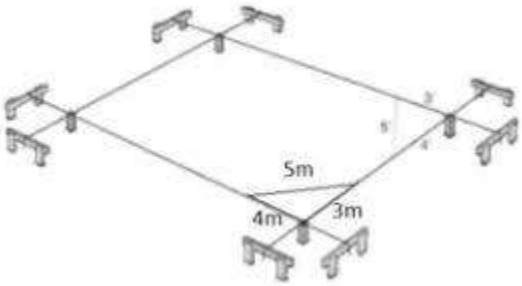
i. _____
ii. _____
iii. _____
iv. _____
v. _____
vi. _____

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. _____

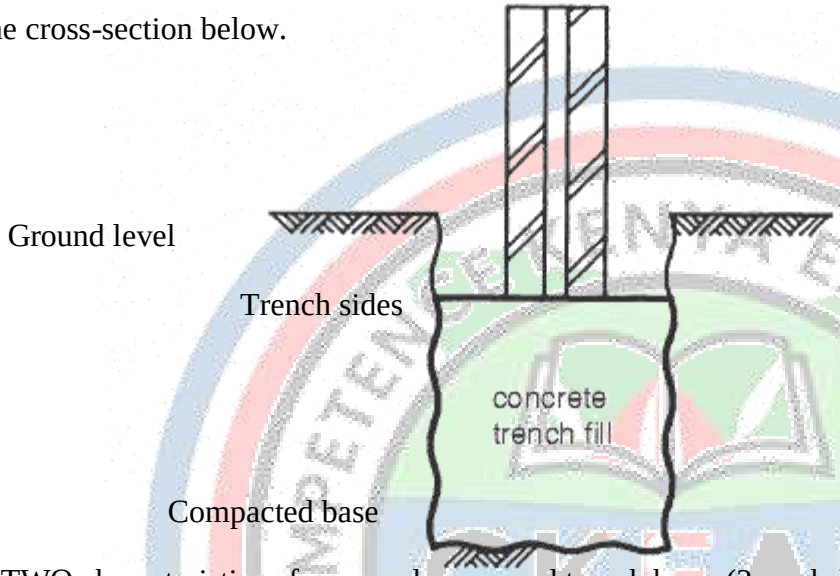
15. (6 marks)

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)*

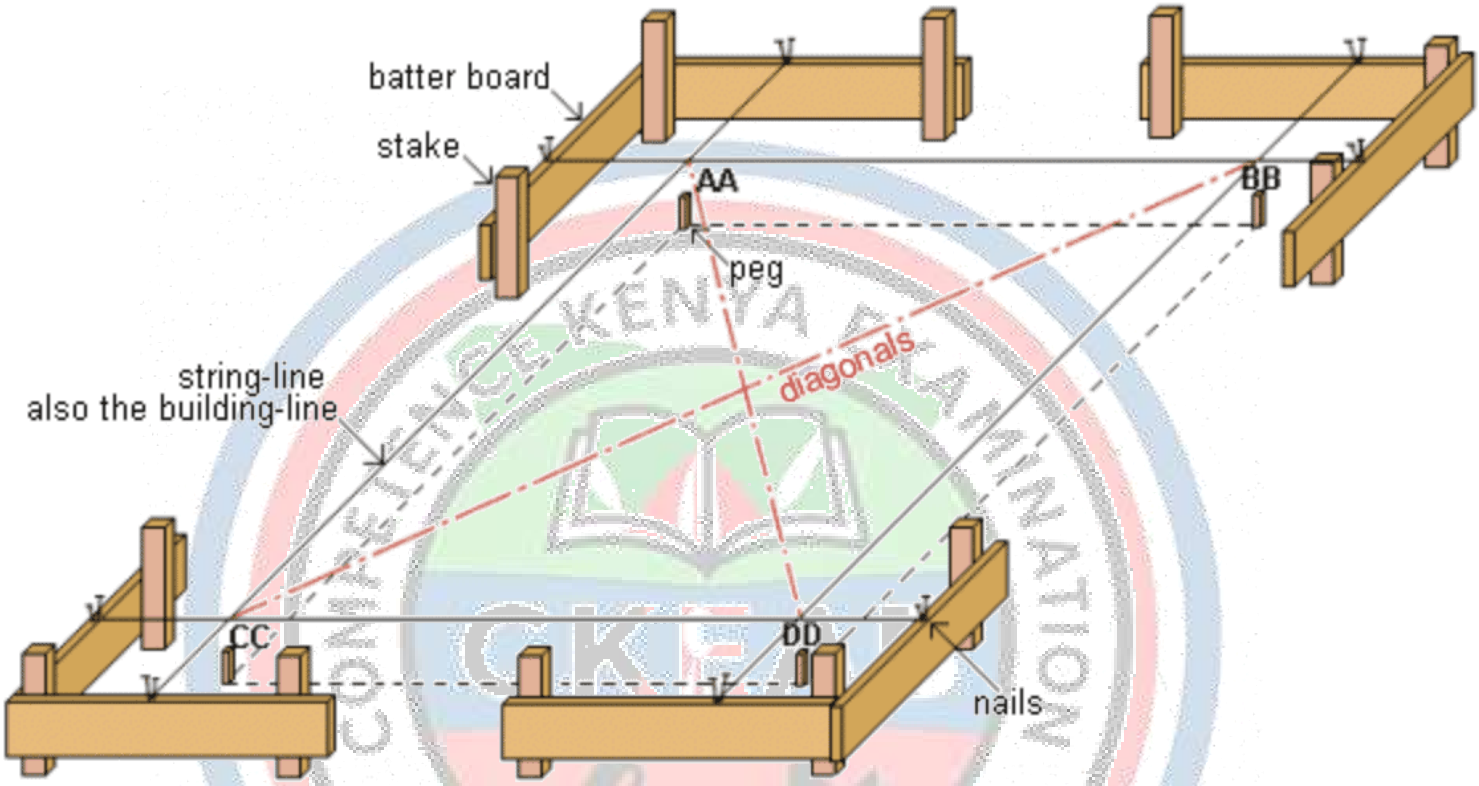
i. _____
ii. _____

SECTION B: (50 MARKS)

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. _____

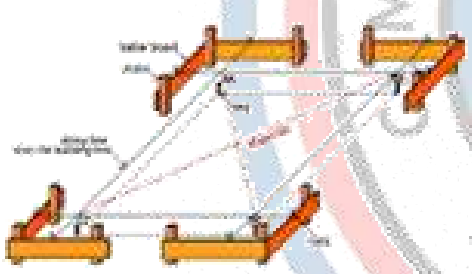
ii. _____

(e) Checking plumbness *(2 marks)*

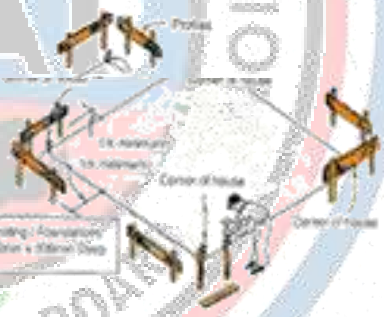
i. _____

ii. _____

13. The diagram below shows a corner setting error.



A



B

(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. _____

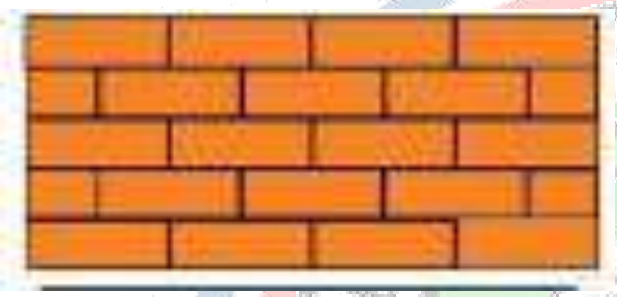
(b) Explain **TWO** effects of using mortar that is too wet. *(2 marks)*

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	nglish 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)*

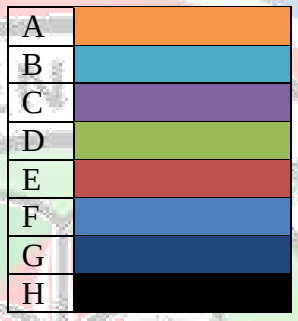
i. _____
ii. _____

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. _____
iv. _____
v. _____

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)*

_____
_____

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)*

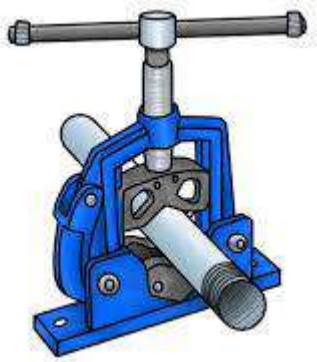
i. _____
ii. _____

SECTION B: (50 MARKS)

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)*

(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. _____

SECTION B: 50 Marks)

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