

## 4.19 BUILDING CONSTRUCTION (446)

### 4.9.1 Building Construction Paper 1 (446/1)

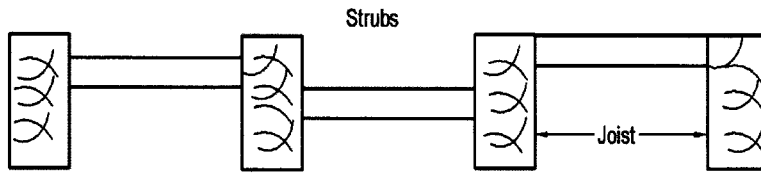
<p>1. (a)</p>	<p><b>Functions of shelter</b></p> <ul style="list-style-type: none"> <li>- To protect man from adverse weather conditions.</li> <li>- To offer privacy to man.</li> <li>- To protect man from natural enemies.</li> </ul>	<p>Any 2 x 1 = (2 marks)</p>
<p>(b)</p>	<p><b>Limitations in starting a small business</b></p> <ul style="list-style-type: none"> <li>- Lack of capital required to start a business.</li> <li>- Lack of experience to run the business.</li> <li>- Government policy, regulations and requirements.</li> </ul>	<p>Any 2 x 1 = (2 marks)</p>
<p>2. (a)</p>	<p><b>Terms used in roof constructions</b></p> <p>(i) <b>Span</b> – Horizontal distance between internal faces of a wall in a room. (1 mark)</p> <p>(ii) <b>Hip</b> – An inclined line produced from the ridge to the intersection of the eaves where external angle is more than 180°. (1 mark)</p>	
<p>(b)</p>	<p><b>Factors influencing the choice of a particular type of roof.</b></p> <ul style="list-style-type: none"> <li>- Size and shape of building.</li> <li>- Appearance of the roof.</li> <li>- Cost of the roof.</li> <li>- Climatic conditions of the area.</li> </ul>	<p>Any 2 x 1 = (2 marks)</p>
<p>3.</p>	<p>(i) <b>Cladding</b> This is a type of finish fixed or hanged on external wall whose main purpose is to provide a degree of sound and thermal insulation or resist wind pressures against the wall and maintain wall aesthetics. It can also be used internally on timber framed walls.</p> <p>(ii) <b>Terrazzo</b> This is a type of floor made of marble chips as aggregates.</p>	<p>2 x 2 = (4 marks)</p>
<p>4. (a)</p>	<p><b>Foundations used on steep sloppy site with stable soil.</b></p> <ul style="list-style-type: none"> <li>- Stepped concrete strip foundation.</li> <li>- Short bored pile foundation.</li> </ul>	<p>2 x 1 = (2 marks)</p>
<p>(b)</p>	<p><b>Factors to consider when selecting a site for a building.</b></p> <ul style="list-style-type: none"> <li>- Accessibility.</li> <li>- Availability of services.</li> <li>- Topography or ground formation.</li> <li>- Vegetation on site.</li> </ul>	<p>Any 2 x 1 = (2 marks)</p>



<p>5. (a)</p> <p>(b)</p>	<p><b>Services as used in building construction.</b> These are installations in a building structure intended to make the conditions in the building and the surrounding comfortable.</p> <p><b>Conditions necessary when installing pipes to convey hot water.</b></p> <ul style="list-style-type: none"> <li>- Pipe lengths should be short.</li> <li>- Related appliances should be kept in close proximity.</li> <li>- Joints should be water tight</li> <li>- Vertical pipes should be at 90° to the horizontal.</li> </ul>	<p>(2 marks)</p> <p>Any 2 x 1 = (2 marks)</p>
<p>6.</p>	<p><b>Load bearing walls</b> These are walls in a structure used to transmit both live and dead loads of a structure to the ground.</p> <p><b>Non-load bearing walls</b> Walls which do not carry other loading apart from their own weight to the ground and are mostly used for partitioning and closing open spaces in a structure.</p>	<p>(2 marks)</p> <p>(2 marks)</p>
<p>7.</p>	<p><b>Batching</b> Measuring the correct proportions of materials in correct ratios to be used for making concrete.</p> <p><b>Mixing</b> Blending thoroughly and completely the proportioned materials by either hand or using machine known as concrete mixer.</p>	<p>(2 marks)</p> <p>(2 marks)</p>
<p>8.</p>	<p><b>Rigid damp-proofing materials</b> These are stiff, fixed and rigorous materials which do not permit water pass through. Examples: Slates, Engineering bricks</p> <p><b>Flexible damp-proofing materials</b> These are materials which are capable of being flexed without breaking. They can be turned, bowed or twisted without breaking and do not permit/allow water to pass through. Examples: Mastic asphalt, bitumen, polythene paper</p>	<p>Explanation – 1 mark Any 1 example – <u>1 mark</u> Total 2 marks</p> <p>Explanation – 1 mark Any 1 example – <u>1 mark</u> Total 2 marks</p>



9.

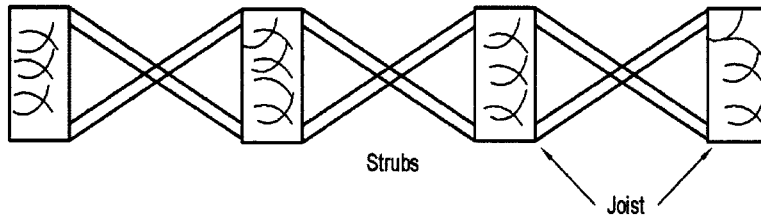


Staggered strutting

Sketch - 1  
Labels - 1  

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2



Staggered strutting sketch –

1mk

Label –

1mk

2 marks

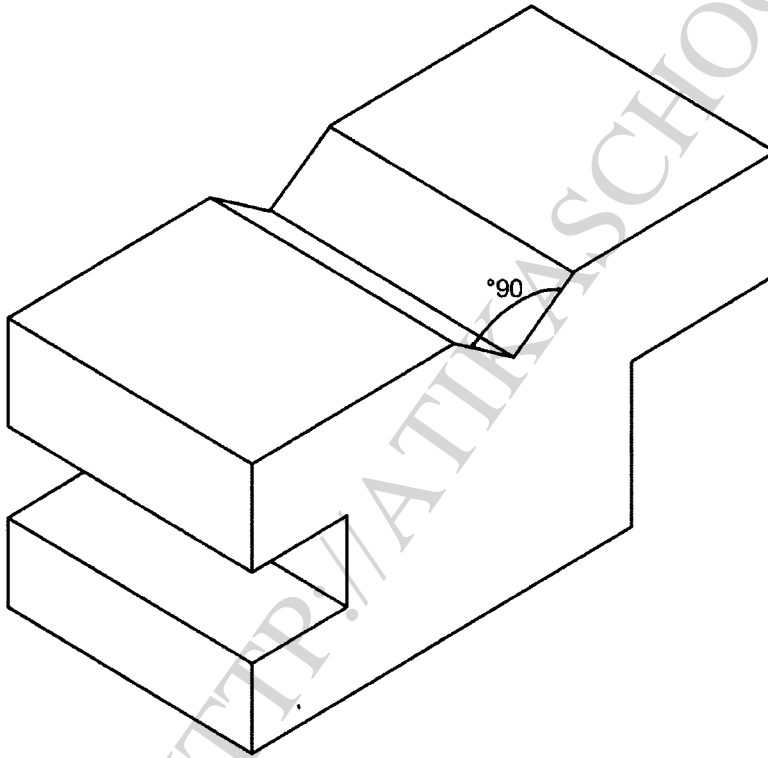
Herringbone strutting sketch –

1mk

Label – 1mk

2 marks

10.



Isometric projection – 1 mark

Point x = 1 mark

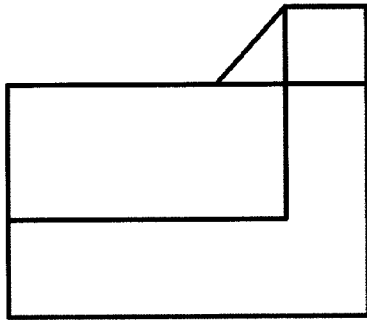
Proportionality – 1 mark

Correct drawing – 3 marks

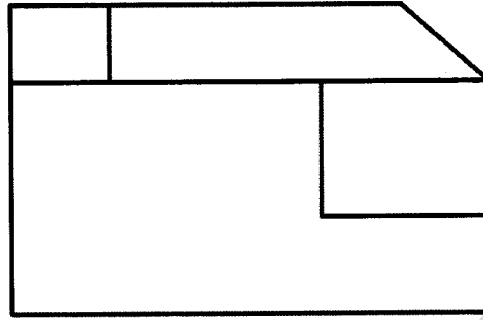
6 marks

**SECTION B**

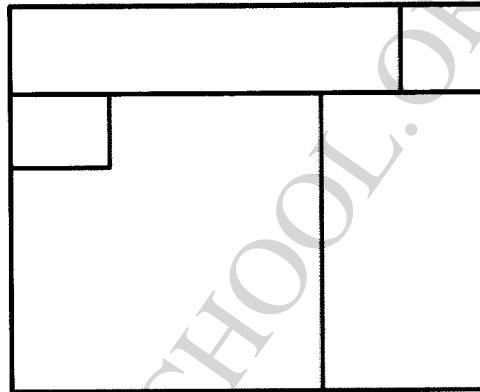
11.



E.E



F.E



PLAN

SCALE = 2  
 1<sup>ST</sup> ANGLE  
 &  
 Projection =  
 4  
 PENCIL  
 WORK = 2  
 F.E. – 3 No.  
 faces  $3 \times \frac{1}{2}$   
 =  $1\frac{1}{2}$   
 E.E. – 4 No.  
 faces  $4 \times \frac{1}{2}$   
 = 2  
 PLAN – 5  
 No. faces  $5$   
 $\times \frac{1}{2} = 2\frac{1}{2}$   
 NEATNESS  
 =  $\frac{1}{1}$   
**TOTAL**  
**=15**

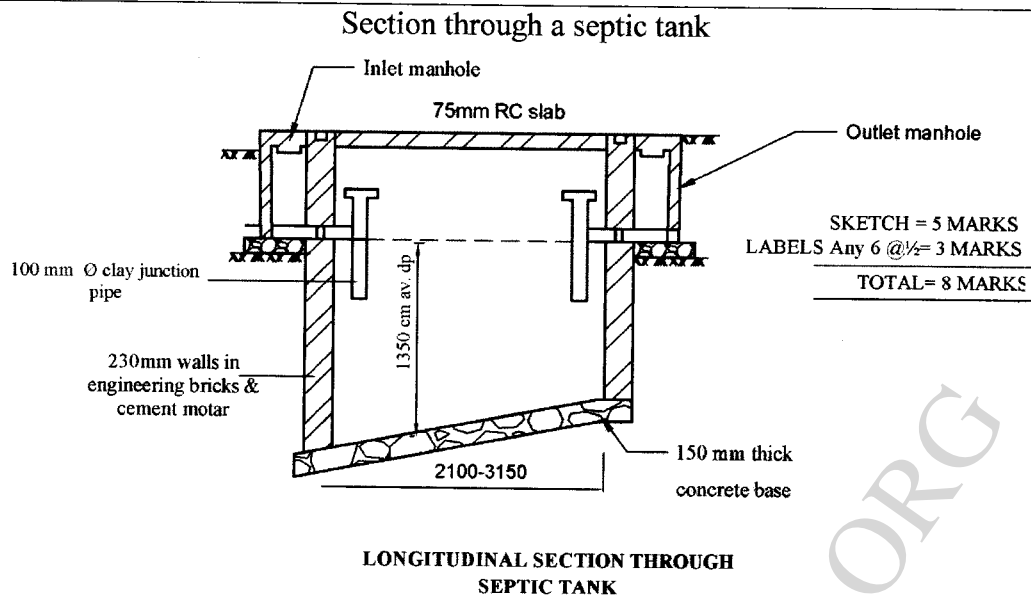
HTTP://ATIKASCHOOL.ORG



<p>12. (a)</p>	<p><b>Procedure of laying PVC tiles on a cement-sand screed floor</b></p> <ul style="list-style-type: none"> <li>- The floor screed is cleaned to remove any dust or oils which may be present.</li> <li>- The centre of the floor area to be tiled is marked to locate a point from which the tiling should commence.</li> <li>- Lines a – a and b – b are marked on the floor to indicate the limits of two intersecting rows.</li> <li>- Some adhesive is applied to the floor and a centre tile pressed firmly in position.</li> <li>- Using lines a – a and b – b as guides the rest of the tiles are laid similarly to the first tile.</li> <li>- Move away from the laid tiles as you lay the rest so as not to step on any laid tile.</li> <li>- After all tiles are laid, the tiled floor is cleaned to remove excessive adhesive or mortar.</li> <li>- Use a blunt object to remove the dirt such that the tile surfaces are not damaged.</li> </ul>	<p>(8 marks)</p>
<p>(b)</p>	<p><b>Kenya Building code requirements for a stair.</b></p> <ul style="list-style-type: none"> <li>- Stairs should be constructed to have a constant and uniform rises and treads in a flight.</li> <li>- Risers measured vertically from top of tread to top of tread should not be more than 188mm.</li> <li>- Treads measured horizontally from faces of two consecutive risers should not be less than 225 mm.</li> <li>- Vertical balusters on stairs and balconies should not be spaced more than 125mm apart.</li> <li>- No protective balustrade should be less than 825mm in a height above landings.</li> <li>- A handrail should be provided at each stair and will not encroach more than 75mm into the minimum width of the staircase.</li> </ul>	<p>(Any 5 x 1 = 5 marks)</p>
<p>(c)</p>	<p><b>Purposes of painting</b></p> <ul style="list-style-type: none"> <li>- Painting helps to protect surfaces from moisture, chemicals, insects and corrosion</li> <li>- Paint provides aesthetics (decorative) to surfaces in the form of colour and hence helps to beautify them.</li> <li>- Painting provides cleanliness and therefore hygienic surfaces.</li> </ul>	<p>Any 2 x 1 = (2 marks)</p>



13. (a)



Sketch = 5  
marks  
Label any 6  
x ½ = 3  
marks  
**Total 8  
marks**

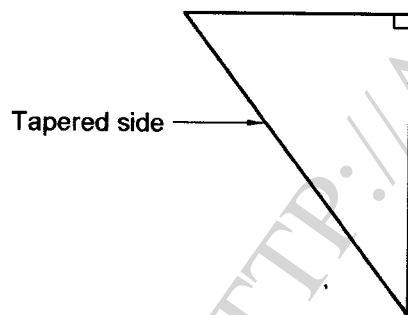
(b)

(i) **Advantages of terrazzo floor finish.**

- High quality floor finish.
- Hard wearing and durable surface.
- Easy to wash and therefore clean surface.
- Dust free surface.
- Wide range of colour combination therefore attractive surface.


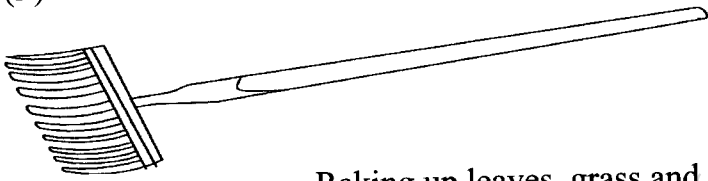
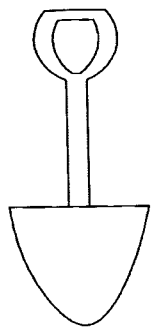
Any 4 x 1 (4  
marks)

(ii)

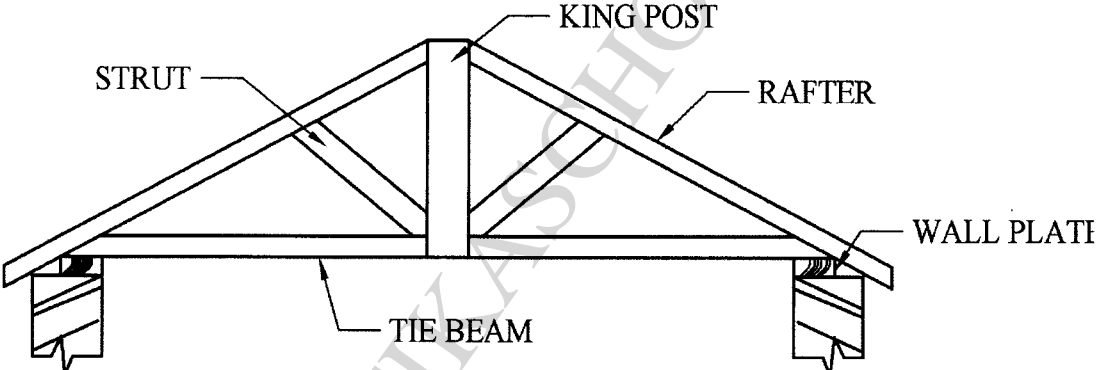


It is used when adjusting height of props on formwork.

Sketch – 1  
Labels – 2 x  
½ = 1  
Use = 1  
**Total 3  
marks**

14. (a)	<p><b>Definition of terms</b></p> <p>(i) Balustrade is a solid paneling between hand rail and strings.</p> <p>(ii) Riser is the vertical part of a step between two consecutive treads.</p> <p>(iii) Going is the horizontal distance between the outer faces of any two consecutive risers.</p>	<p>(1 mark)</p> <p>(1 mark)</p> <p>(1 mark)</p>
(b) (i)	<p><b>Gardening tools</b></p> <p>(i) <b>Trowel</b></p>  <ul style="list-style-type: none"> <li>- Scooping soil out of holes</li> <li>- Planting bedding plants</li> </ul> <p>Sketch – 2 marks</p>	3marks
(ii)	<p><b>Rake</b></p>  <ul style="list-style-type: none"> <li>- Raking up leaves, grass and debris</li> <li>- Levelling already broken soil</li> </ul> <p>Sketch – 2 marks</p>	3 marks
(iii)	<p><b>Spade</b></p>  <ul style="list-style-type: none"> <li>- Digging and trenching</li> <li>- Planting trees and shrubs</li> <li>- Mixing compost and other types of manure</li> </ul> <p>Sketch – 2 marks</p>	3 marks
(c)	<p><b>Functional requirements of formwork</b></p> <ul style="list-style-type: none"> <li>- Strong enough to withstand working loads and weights of concrete.</li> <li>- Be sufficiently rigid to prevent undue movement.</li> <li>- Have tight joints to prevent loss of grout from the concrete.</li> <li>- Produce a concrete face of the required finish.</li> <li>- Permit ease of removal when stripping/striking.</li> <li>- Be economical. i.e. allow reuse of timber.</li> </ul>	<p>Any 3</p> <p>x 1 = (3 marks)</p>



15. (a)	<p><b>Ways of controlling termites on site</b></p> <ul style="list-style-type: none"> <li>- Ensure all wood used in construction is treated with wood preservatives.</li> <li>- The soil under the building to be treated with termite pesticide.</li> <li>- The soil and area around the building should be treated with termite pesticide.</li> <li>- Timber stored on site should be kept on a raised platform.</li> </ul>	Any 3 x 1 = (3 marks)
15(b)	<p><b>Factors that influence choice of foundation</b></p> <ul style="list-style-type: none"> <li>- Depth of foundation to the firm ground/bed.</li> <li>- Type of soil on site.</li> <li>- Weight of building to be erected.</li> <li>- Topography of the site.</li> </ul>	Any 3 x 1 = (3 marks)
15 (c)	<p>(i) <b>King post truss</b></p>  <p>(ii) <b>Advantages of direct cold water supply system</b></p> <ul style="list-style-type: none"> <li>- No danger of contamination of water.</li> <li>- Drinking water may be obtained at all appliances.</li> <li>- There is a lot of saving in pipework especially with multi-storey buildings.</li> </ul> <p><b>Disadvantages of direct cold water supply</b></p> <ul style="list-style-type: none"> <li>- If the supply is disconnected the flow of water immediately drops.</li> <li>- There is possibility of foul water from sanitary appliances being siphoned back to the mains.</li> <li>- There is tendency to have water hammer as a result of more points connected directly.</li> </ul>	<p>Sketch = 3 marks Label any 4 x <math>\frac{1}{2} = 2</math> marks Total = 5 marks</p> <p>Any 2 x 1 = 2 marks</p>

