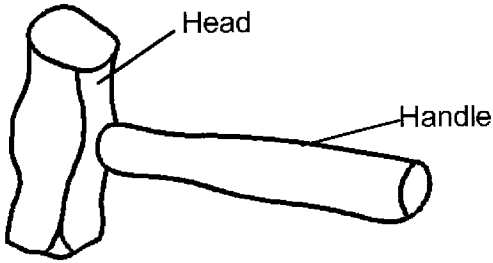



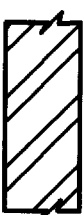


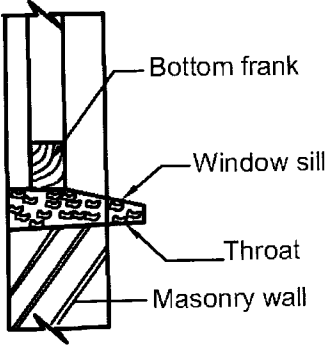
4.18 BUILDING CONSTRUCTION (446)

4.18.1 Building Construction Paper 1 (446/1)

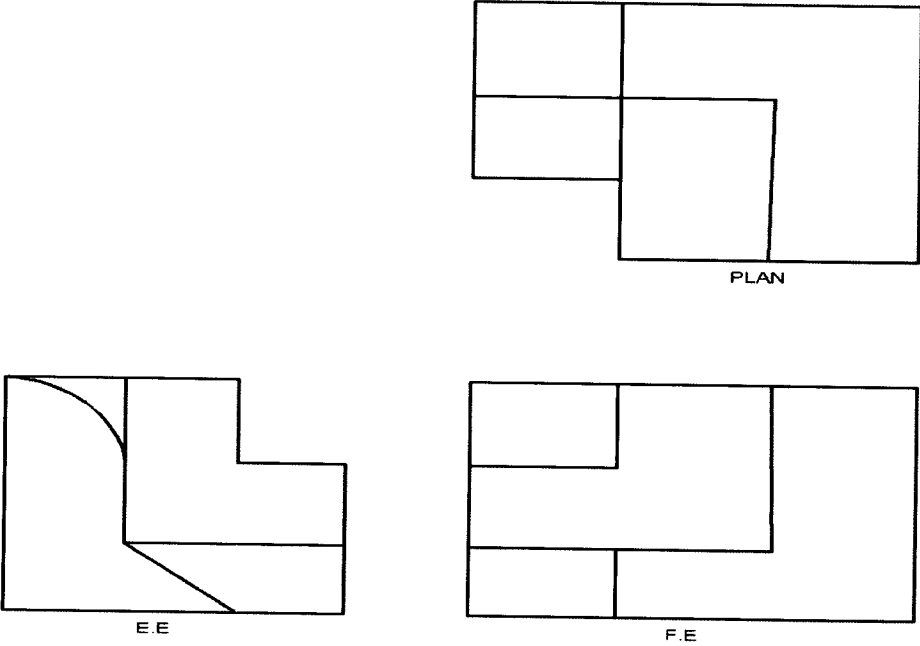
1. (a)	Setting out tools: <ul style="list-style-type: none"> - Type measure. - Hammer. - Saw. - Panga. - Mason's square. - Ranging line 	Any 4 x 1/2 = 2	(2 marks)
(b)	Types of shallow foundations: <ul style="list-style-type: none"> - Strip foundation. - Stepped foundation. - Pad foundation. - Raft foundation 	Any 2 x 1/2 = 1	(1 mark)
2. (a)	Functions of fine aggregates: <ul style="list-style-type: none"> - Filler. - Strength. - Volume of mix. 	Any 2 x 1 = 2	(2 marks)
(b)	 <p>CLUB HAMMER</p>	SKETCH = 2 Labels 2 x 1/2 = 1	(3 marks)
3. (a)	Desirable properties of concrete. <ul style="list-style-type: none"> - Compressive strength. - Durability. - Unit weight. - Thermal. - Density. 	Any 4 x 1/2 = 2	(2 marks)

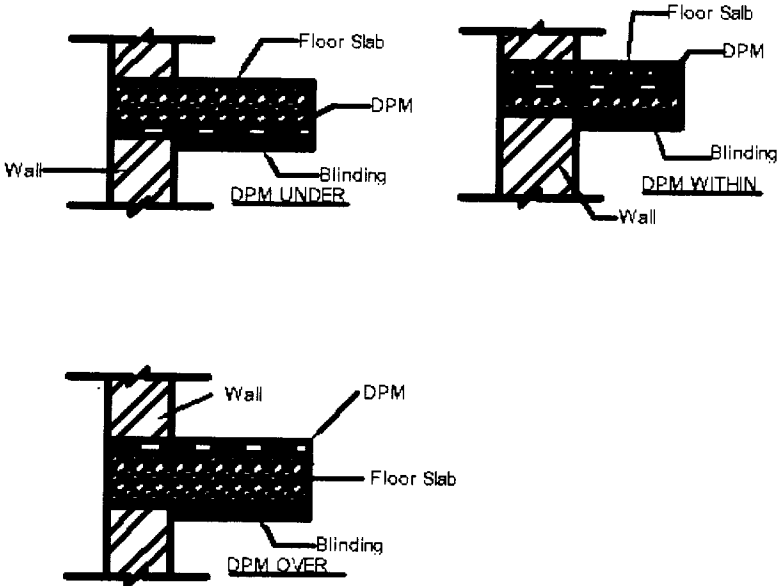
(b)	Materials for damp proofing: <ul style="list-style-type: none"> - Hot bitumen. - Plastic sheets. - Bituminous felt. - Lead sheets. - Copper sheets. - Mastic asphalt. - Engineering bricks. 	<p style="text-align: right;">Any 4 x ½ = 2</p> <p style="text-align: right;">(2 marks)</p>
4. (a)	Functions of Toe board in scaffolds. <ul style="list-style-type: none"> (i) - Prevents materials from falling over the edge. - Preventing tools from falling. 	<p style="text-align: right;">2 x ½ = 1</p> <p style="text-align: right;">(1 mark)</p>
(ii)	Types of scaffolds <ul style="list-style-type: none"> - Dependent/putlog scaffold - Independent scaffold - Cantilever. - Trestle. 	<p style="text-align: right;">Any 2 x ½ = 1</p> <p style="text-align: right;">(1 mark)</p>
(b)	Reasons for providing a gate on a construction site. <ul style="list-style-type: none"> - Keeping off non-construction workers. - Protection of property on site. - Control of entry and exit of workers thus accountability. - Control of entry of vehicles. 	<p style="text-align: right;">Any 2 x 1 = 1</p> <p style="text-align: right;">(2 marks)</p>
5. (a)	Uses of window sills: <ul style="list-style-type: none"> - Holds window pieces together. - Drains water off the wall. - Aesthetics. 	<p style="text-align: right;">Any 2 x 1 = 2</p> <p style="text-align: right;">(2 marks)</p>
(b)	Parts of a roof: W – Rafter X – Ridge tile Y – Roof tile Z – Batten	<p style="text-align: right;">Any 4 x ½ = 2</p> <p style="text-align: right;">(2 marks)</p>
6. (a)	Hoarding This is a temporary solid fence erected around the construction site to prevent unauthorized access to site and also injuries to passersby from falling debris/objects.	<p style="text-align: right;">(2 marks)</p>

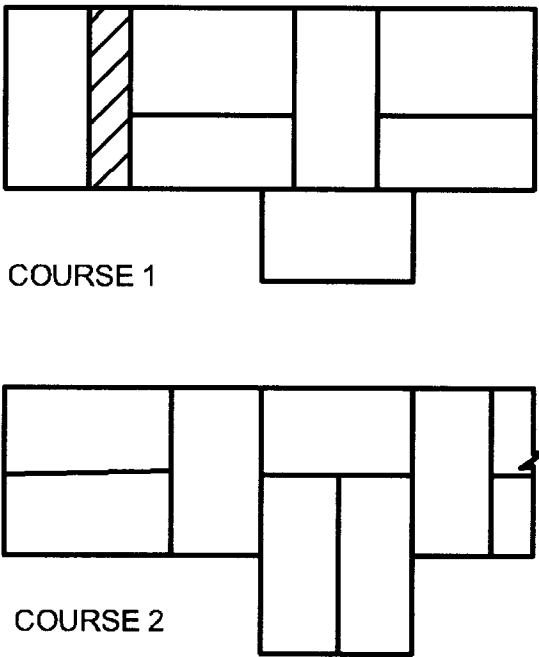
(b)	 <p>Concrete wall</p>  <p>Wall plate</p>  <p>Timber skirting</p>  <p>Brick wall</p> <p style="text-align: right;">$4 \times \frac{1}{2} = 2$</p>	(2 marks)
7. (a)	<p>Important safety wear when fixing iron sheets on a roof:</p> <ul style="list-style-type: none"> - Gloves. - Overall. - Rubber soled boots. - Safety glasses. - Helmet. <p style="text-align: right;">Any $4 \times \frac{1}{2} = 2$</p>	(2 marks)
(b)	<p>Description of roof members:</p> <p>(i) Tie beam A horizontal member used for tying the ends of rafters in a roof. It is a tension member.</p> <p>(ii) Purlin: One of several horizontal timbers supporting the rafters of a roof which may be under the rafters in tile roof construction or placed on rafters to support iron sheets.</p> <p style="text-align: right;">(2x1)</p>	(2 marks)

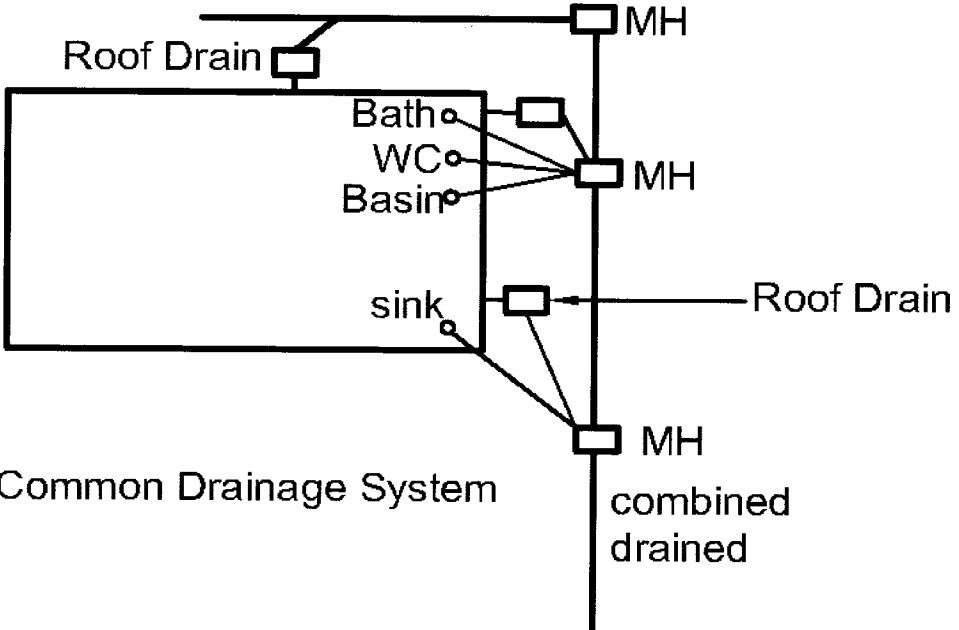
8. (a)	<p>Functions of:</p> <p>(a) Windows.</p> <ul style="list-style-type: none"> - Allows free flow of air in and out of the building. - Allows in light. - Aesthetical look of the building. - Thermal and acoustic requirements. - Security and safety <p style="text-align: right;">Any 2 x 1 = 2</p> <p>(b) External Doors</p> <ul style="list-style-type: none"> - Allows entry and exit. - Provides protection against weather elements. - Provides safety and security. <p style="text-align: right;">Any 2 x 1 = 2</p>	<p style="text-align: right;">(2 marks)</p> <p style="text-align: right;">(2 marks)</p>
9.	<p>Funtions of Skirtings</p> <ul style="list-style-type: none"> - Ensure floors can be mopped without soaking the wall. - Hide ugly wiring. - Cover gaps. - Provide barrier between wall and furniture. - Acts as a decorative element. <p style="text-align: right;">Any 4 x ½=2</p>	<p style="text-align: right;">(2 marks)</p>
10.	 <p style="text-align: right;">SKETCH = 2 LABELS Any 2 x 1 = 2</p>	<p style="text-align: right;">(4 marks)</p>

SECTION B

<p>11.</p>	<div style="text-align: center;">  <p>PLAN</p> <p>E.E.</p> <p>F.E.</p> </div> <p>3 views placed Correctly in third angle projection (3 x 1) = 3 F.E. 5 faces @ $\frac{1}{2}$ = $2\frac{1}{2}$ E.E. 4 faces @ $\frac{1}{2}$ = 2 Plan 5 faces @ $\frac{1}{2}$ = $2\frac{1}{2}$ Pencil work 3 x 1 = 3 Neatness = 1 Correct scale = 1</p> <p style="text-align: center;"><u>15 marks</u></p> <p style="text-align: center;">NOTE: This solution is not drawn <u>full-size</u> but while marking the solution should be drawn <u>full size</u>.</p>	<p style="text-align: center;">(15 marks)</p>
<p>12. (a)</p>	<p>Functions of plasters on walls:</p> <ul style="list-style-type: none"> - Creates a smooth surface which avoids collection of dirt/dust. - Create easily washable thus hygienic surface. - Gives protection to backing wall. - Used as a decorative coating of walls. - Used as a background surface onto which to apply other finishes. - Used to conceal services. <p style="text-align: right;">Any 3 x 1 = 3</p>	<p style="text-align: center;">(3 marks)</p>

(b)	Procedure of erecting a putlog scaffold: <ul style="list-style-type: none"> - Select the materials and tools. - Prepare the ground surface. - Position the base plate. - Place sole plates at predetermined positions on the standards. - Place and fix standards and putlogs tied to the walls. - Fix the ledgers. - Fix the working platform while taking care of the safety features. 	(6 marks)
(c)	Ways of preventing damp penetration through the floor slab:  <p>Correct sketch – 2 marks Labels Any 2 x ½ = <u>1 mark</u> <u>3 marks</u></p> <p>Any two sketches Drawn – 2 x 3 = <u>6 marks</u></p>	
13. (a)	Laying the first corner block: <ul style="list-style-type: none"> - Mark out the position of the wall on the slab. - Tie a line from the profile to define the edges of the wall - Mark out the position of the first block - Lay the damp proof course (d.p.c). - Mix mortar for laying the blocks. - Lay the bed mortar to approximate thickness. - Place the block on the mortar bed - Plumb the block on the face side and the end in line with the foundation wall. - Tap and level the top of the block to ensure that the thickness bed is correct and the top of the block is level with the straight edge - Clean the excess mortar around the bed. - Repeat the procedure on the second block 	(7 marks)

(b)	 <p>COURSE 1</p> <p>COURSE 2</p> <p>Correct course 1 = 4</p> <p>Correct course 2 = 4</p> <p>8 marks</p>	
14. (a)	<p>Underground services</p> <ul style="list-style-type: none"> - Electricity cables - Oil pipeline - Gas mains - Communication cables - Water mains - Sewer mains - Drainage pipes - Traffic signals cables. <p>Any 4 x 1 = 4</p>	(4 marks)

(b)	<p>Combined drainage system</p>  <p>Common Drainage System</p> <p>In combined drainage system both surface water and foul water discharge into the sewerage treatment plant.</p> <p>Correct sketch - 4 Labels – Any 6 x ½ - 3 EXPL. _____ - 4</p> <p style="text-align: right;">11 marks</p>	(1 mark)
15. (a)	<p>Causes of failure in foundations:</p> <ul style="list-style-type: none"> - Soil type. - Poorly compacted fill material. - Slope failure. - Erosion. - Poor construction. - Poor drainage from the yard. <p style="text-align: right;">Any 4 x 1 = 4</p>	(4 marks)
(b)	<p>Procedure of laying a reinforced concrete ground floor slab:</p> <ul style="list-style-type: none"> - Prepare the base i.e hardcore and blinding. - Place damp proof membrane. - Prepare and fix formwork. - Fix concrete spacers to reinforcement. - Place reinforcement in the floor area. - Prepare concrete materials. - Mix concrete. - Pour concrete. - Consolidate the concrete. - Finish the concrete surface. 	(11 marks)