

30.18 BUILDING CONSTRUCTION (446)



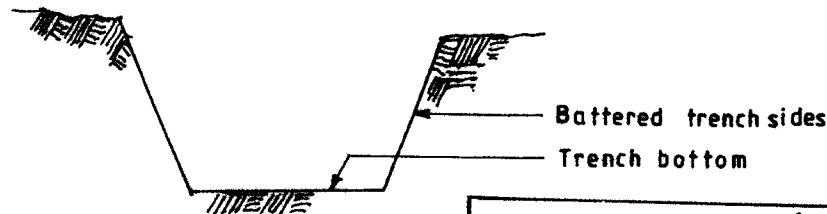
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30.18.1 Building Construction Paper 1 (446/1)

1. (a) Services required on a construction site.
- Roads for access to the site.
 - Water for consumption and for construction use.
 - Electricity supply for provision of power to used by machines on site.
 - Telephone for communication
- Any 2 x ½=1 mark

- (b) Factors that may influence type of buildings constructed in a particular region are:-
- Culture/traditions of the people
 - Availability of type of building materials.
 - Weather conditions in the area.
 - Land terrain.
 - Kind of wealth of the people in that region/area possesses.
 - Use of the building.
 - By-laws/local authorities' regulations.
- Any 4 x ½=2 marks

2. (a) Treatment of trench sides to shallow excavation.



Correct sketch	= 1mk
Labels Any 2 x ½	= 1mk
	<hr/>
	= 2mk

- (b) Two reasons placing hardcore in a building at the ground floor level are:-
- To raise the floor level after digging off the weak soil that may not sustain the building loads(s).
 - To provide a strong stable floor base.
 - Retard rise of water from ground (capillarity action).
- 2 x 1=2 marks

3. Fixing the door frame after finishing the wall construction.

Advantages.

- Allows the mason to construct the wall faster.
 - The frame will not be damaged since it will be put in position only after the wall construction is complete.
- 2 x 1=2 marks

Disadvantages

- Knocking out parts of the joints to fix in the rag bolts or the wall pass will weaken the wall.
- It takes time to dig the wall and again fill it in order to hold the door frame.

2 x 1=2 mark

4. (a) Four factors to consider when choosing a pipe to use for installing water in a house are:-

- Cost factor
- Durability – not easy to damage
- Maintenance costs
- Individual preference
- Size of bore
- Where to be used.

Any 4 x ½=2 marks

- (b) (i) **Beauty**
- Should create beauty (enhance beauty)
 - Be attractive to the eye.
 - Should be welcoming and pleasant.
- (ii) **Create aroma**
- Should develop some kind of aroma (nice smell).
 - At different times of the day should be releasing some kind of nice smell.
- (iii) **Create scene which may bring collection of birds and insects**
- Bring insects such as butterflies which are nice to look at.
 - Bring about birds that will fly around sourcing for nectar.

Any 2 x 1 = 2 marks

5. (a) **The importance of the factor act as applied in the construction industry is as follows:-**
- (i) To protect the welfare interests that leads to the wellbeing of the workers in the construction industry in areas such as clothing where to eat e.g site canteen, where to bathe and help themselves and their entire wellbeing.
- (ii) Enhance work safety: The deals with their attire, proper work ethics and how they maneuver with their duties on site.
- (iii) Health: The wellbeing of the workers in terms of first aid kits, helmets, hand gloves, goggles.

Any 2 x 1 = 2 marks

- (b) Factors that determine the strength of a mortar.

Mix ratio

Water – connects layers to standards

Grading of aggregate (particle size)

Mixing surface (to be water-tight)

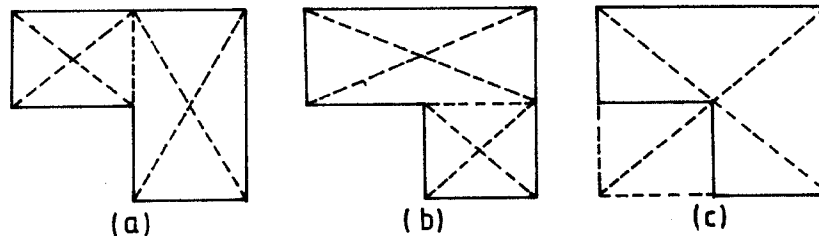
Any 2 x 1 = 2 marks

6. (a) Functions of scaffold components.

- Double coupler – connects layers to standards
- Swivel coupler – connects cross braces/braces to standards.

2 x 1 = 2 marks

- (b)



3 x 1 = 3 mks

7. (a) **Building code requirement**

M – Should be the higher of the following values, N or 300mm minimum whichever is higher. (1 mark)

- (b) **The activities carried out during leveling the bottom of trench are:**

- cutting
- filling
- Ram/consolidation
- Check for level.

4 x 1/2 = 2 marks

8. (a) **Reason of establishing a datum peg.**

A datum peg has to be established on site because all references for heights are referred from it. (1 marks)

- (b) **Positions that may require damp proofing on an external wall are:**

- Between wall and floor slab
- At the threshold
- At window seal
- Above window opening

Parapet wall beneath coping.

Any 4 x 1/2 = 2 marks

(c) **The function of a wallplate is to:**

- Safety transfer roof loads from rafters on the walls below.
- To provide the bearing component.
- To provide the fixing media.

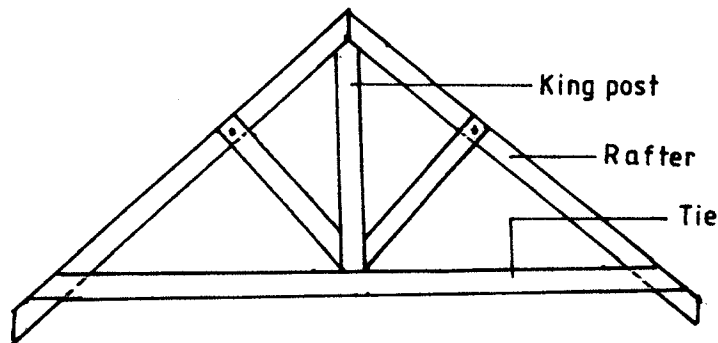
Any 2 x 1 = 2 marks

9. (a) **Types of floor finishes are:**

- Concrete/screed
- Tile
- Woodblocks/parquet/wooden boards
- States
- Carpets

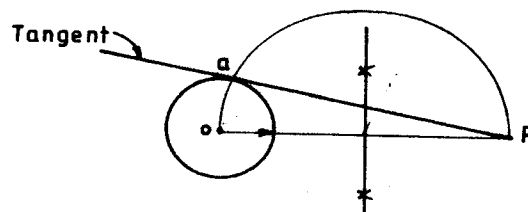
Any 4 x 1/2 = 2 marks

(b) **KINGPOST TRUSS**

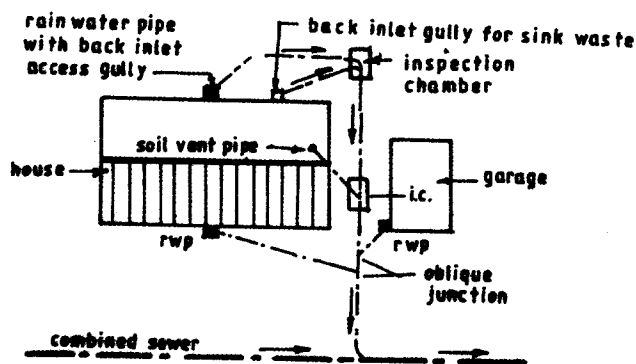


Sketch	= 1 1/2 mks
Labels Any 3 x 1/2	= 1 1/2 mks
	<u>= 3 mks</u>

10.



Correct ϕ of circle (20mm)	= 1/2 mk
Line OP - length (50mm)	= 1/2 mk
Bisectors of OP 2 x 1/2	= 1 mk
Semi circle	= 1/2 mk
Tangent Pa	= 1/2 mk
	<u>= 3 mks</u>



Description - 2
 Correct sketch - 6 marks
 Labels Any 8 x 1/2 - 4 marks
12 marks

13. (a) **Causes of failure of foundations**

- Non uniform settlement of subsoil and masonry.
- Alternate swelling and shrinkage of soil in wet and dry cycles of the season.
- Lateral escape of soil beneath the foundation.
- Roots of trees and shrubs.
- Horizontal movement of soil adjacent to the structure
- Action of weathering agents.

Any 5 x 1=5 marks

(b) **Laying the concrete ground floor.**

- Remove the soil to the required stable bed.
- Fill the room spaces with high quality hardcore.
- Ram down the hardcore until it is level with the foundation walls.
- Fix formwork against the external sides of the walls to the thickness of the concrete required.
- Fill the top part with murrum or granular material to seal the hardcore pockets and its sharp edges.
- Wet the murrum and ram it fully.
- Lay the d.p.c. over the wall and floor area to be sure of avoiding damp penetration from the ground level to the floor level.
- Pour concrete to the required depth.
- Level the concrete when still wet to achieve the required level using a straight edge.
- Cure the concrete regularly to achieve the required strength.

10 x 1=10 marks

14. (a) **Functions of plaster.**

- Aesthetics/beauty.
- Reduces rate of water absorption on the surface of the wall.
- Sound proofing.
- Thermal insulation.
- Covers the rough surface of the wall.
- Provides smooth surface to receive wall finishes.

Any 4 x 1=4 marks

(b) **Procedure of erecting dependent timber scaffold.**

- Erect standards vertically on top of base plates, about 1m from the wall and at approximately 2m intervals.
- Tie ledgers to the standards with strong rope and at convenient intervals.
- Place putlogs onto the ledgers at one end and into the wall at the opposite end.
- Place a platform/boards across the putlogs.
- Fix a guardrail and the boards onto the standards

5 marks

Prevention of dampness penetration:

- (c) (i) Inserting a suitable damp proof course in the thickness of the wall:
 DPC is inserted in the following positions in the wall, between the Concrete slab and the wall, at the threshold, under the window cill and above the window frame.

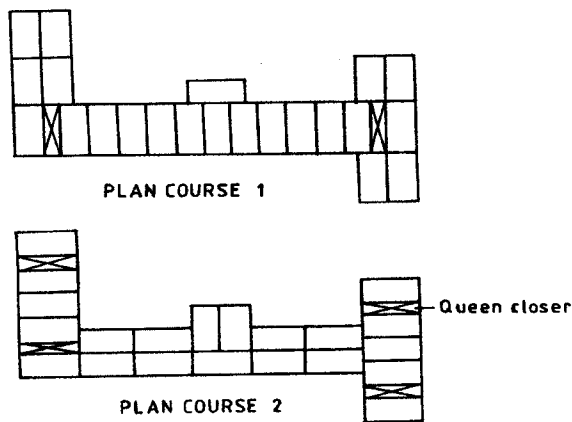
- (ii) Applying to the exposed face of the wall a barrier such as cement rendering or some suitable cladding like a vertical tile hanging.
- (iii) By constructing a cavity wall to provide a suitable barrier to the passage of moisture through the wall. 3 x 2=6 marks

15.

(a)

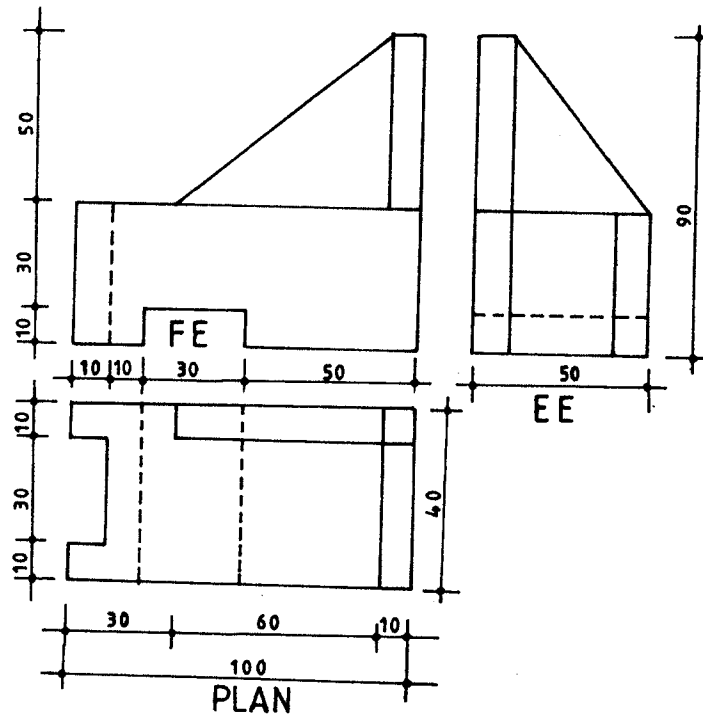
- Sketch lines between the corner profiles forming right angles.
- Place mortar of the foundation slab.
- Transfer the walls thickness on either side using a plumb bob.
- Mark the corner of the wall on the mortar.
- Mark another line from the second string to form a right angle.
- Place the blocks aligned to the mark and check the blocks for plumbness, straightness and levelness.
- Fill the vertical joint with mortar. 7 marks

(b)



Correct bonding at T-junction	2 x 1	= 2 mks
" " " Attached pier	2 x 1	= 2 mks
" " " Return angle	2 x 1	= 2 mks
" " " Stopped end	2 x 1	= 2 mks
		<u>= 8 mks</u>

11.



Correct interpretation	= 2 mks
Dimension in each view (3×2×½)	= 3 mks
Scale	= 2 mks
Correct views:	
• Plan	= 2 mks
• Front elevation	= 2 mks
• End elevation	= 2 mks
• Quality of lines	= 2 mks
	<u>= 15 mks</u>

SECTION B

12. (a) **Three factors that govern the pipe lay-out of drainage system.**
- Nature of discharge points
 - Position of discharge points
 - Drainage system of the Local Authority Sewers. 3 x 1=3 marks

- (b) **Combined drainage system.**
 In this system from roofs and paved areas together with effluent of sanitary fittings are collected together and discharged into sewer. All the drains therefore discharge into one common sewer.
2 marks