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ID # 7936.

Sec # B

Paper # Civil Eng Draw..

Dep # BE(c)

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Q 1:-

Plumbing System:-

Plumbing System is the pipes, drains fittings valves, valves assemblies and devices installed in a building for the distribution of water for drinking, heating and washing.

Plumbing is usualy distinguished from water supply system. in that a plumbing system serves one building. while water supply system serves a group of buildings.

Components of Plumbing :-

1) **Pipes:-**

Water Supply pipes:-

All water under pressure and mostly embedded in floors / walls or fixed on walls.

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for water Supply pipes meterial used is galvanized iron, Copper Stainless steel rigid pvc, upvc, cpvc, PPRC KITEC, UNIPIPE.

i) **Copper Pipes :-**

Copper piper are eiser to essamble because in its popular from it does not require threading. There three type of copper water pipes of plumbing tube x, y & z.

. Mostly types of piper are following.

iii) Galvanized Iron
iv) Plastic pipe
v) Low density polyethylene
vi) High Density polyethylene
vii) Polyethylene pipes.
viii) Rigid
a) Rigid polyvinyl Chloride
b) Composite pipe.
ii) cement pipe.

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2) **Joints :-**

Connection blw two pipes either of the same material or different meterial is made in different ways either fiting joints solvent capillary joints or compression joint are used.

3) **Fitinges :-**

fitings not only the pipes together. but turn corners branch out in servel direction.

⇒ Types :-

1) Elbow
2) Coupling
3) union
4) Reducer
5) Tee
6) Cross fittings
7) Trap primers
8) Combination Tee etc

4) **Fastening pipes :-**

5) **Flared :-**

Flared connection should not be cofused with compression, connectors, with

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which they are generally not interchangable.

6) **Valves:-**

A valve is a device that regulates flow of substance by opening, closing or partially obstructing various passageways.

For multi-storey buildings:-

For plumbing purpose, the term "multi storey" is applied to buildings that are too all to be supplied throughout by the normal pressure in the public water mains. These building have particular needs in the design of their sanitary drainage and venting system water main supply pressure to (8-12) meters (25-40 feet) can suply a typical two story building but higher building may need pressure boster system.

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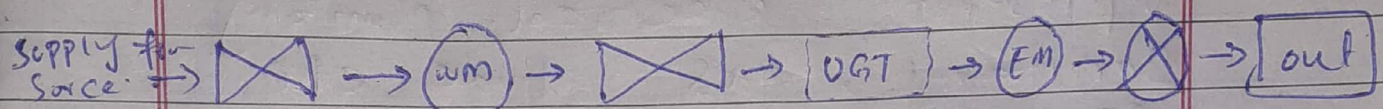
Characteristic :-

⇒ Entire system is based on gravity flow and augmented by filts ~~pop~~ pumps and ensures no air locking to entire pipe.

⇒ Development of flow diagram.



⇒ In any building where water supply is required is called a wet area.

⇒ Identify wet areas on all the floors and prepare a key plan for the entire building showing location of wet areas on all floor

⇒ water supply drawings show both hot & cold water layout

⇒ Least length route of pipe should be adopted.

water supply pipes may be

⇒ Concealed

⇒ Exposed

⇒ Combined.

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Q = 2 :-

Importance of Symbols:-

Just an in Chemistry we use symbols to represent elements. in architectural floor plans we use to represent electrical, plumbing Sanitary, gas Hvac etc equipments.

These sysmbols only and they do not represent the shape, size, color of the actual item.

The description of the specific items is covered in the specification of actual item.

Standard abbrevations & nomenclature are considerd part of symbols.

A floor plan, therefore usually contains a list of symbols/legends being used on that particular floor plan.

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Sewerage Symbols:-

1. → S → S →

Main Sewerage Lines.

2. → S → MH → S →

Manhole

3. → S → G.T → S →

Gully Trap

4. → S → Gr.T → S →

Grease Tap

5. → S → FD → S →

floor Drain

6. → S →

up

waste pipe

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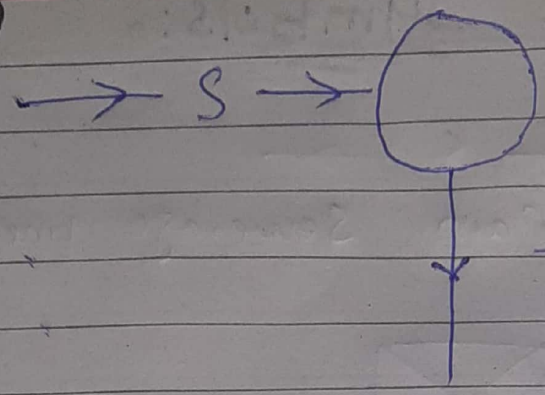

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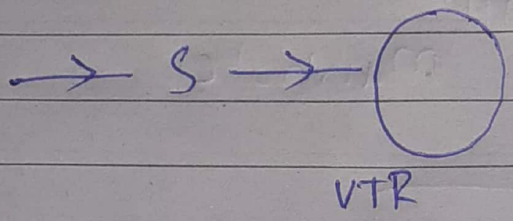

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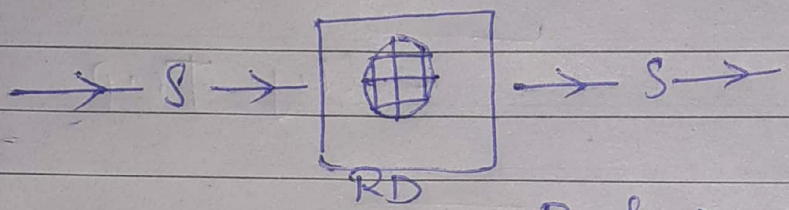
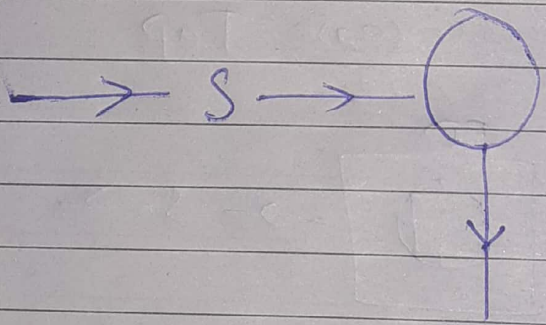


Roof Drains

(10)



Down pipe for Rain water.

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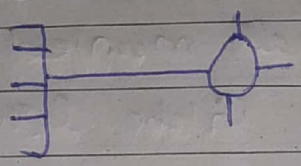
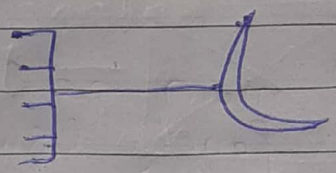
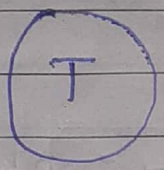
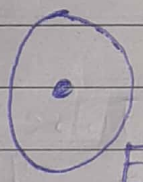
Electrical symbols:-

1)  Gate light

2)  Security Light

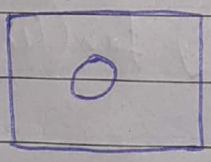
3)  Telephone Socket

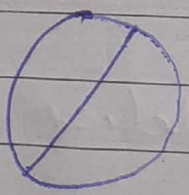
4)  Bell push

5)  Call bell.

EB

6) Mirror Light.

7)  Ceiling Mounted/ Porch light.

8)  Ceiling mounted/ Globe light

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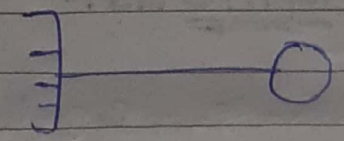
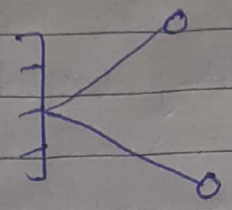
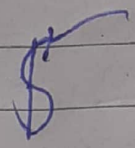
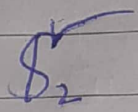
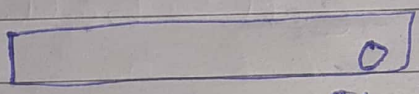
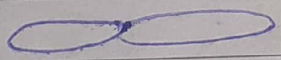
9)  Wall mounted/ Globe light

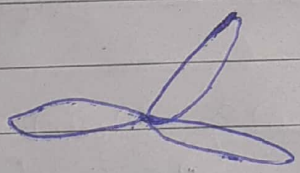
10)  Wall mounted/ fancy light

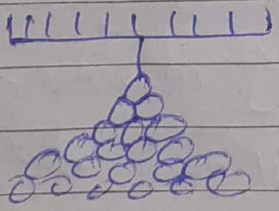
11)  Switch (single pole)

12)  Switch (Double pole)

13)  Tube light -4ft long.
TL

14)  Exhaust fan
EF

15)  Ceiling fan (48"-58" inch)

16)  Chandelier

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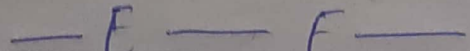
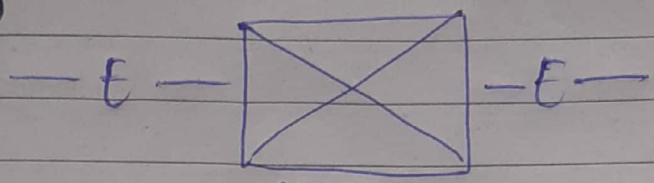
17)



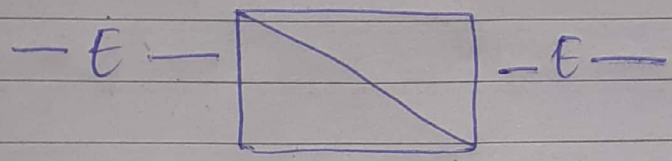
Main Supply Line.

18)



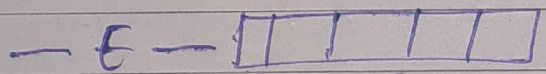
Main Control Board.

19)



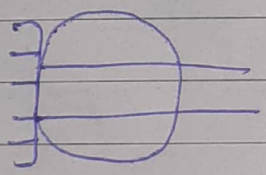
Distribution Board

20)



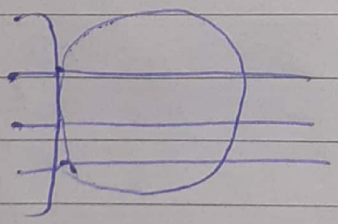
Switch Board.

21)



Electrical outlet

22)



Electrical outlet

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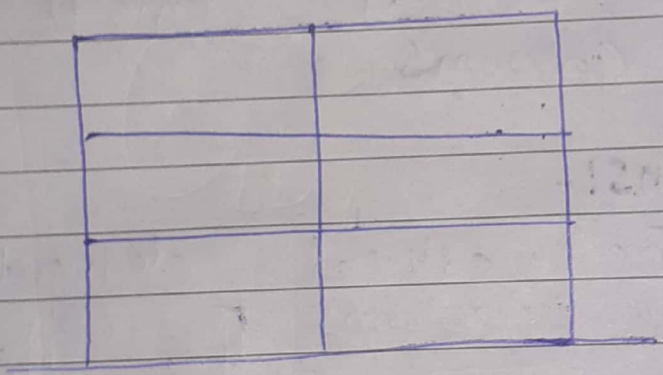
Q = 3 :-

Frame Structures :-

Frame Structures are the Structures having the combination of beam, Column and Slab to resist the lateral and gravity loads. This Structures are usually used to overcome the large moments developing due to applied loadings.



Structure :-

A Structure is a system of inter connected elements to carry loads safely to under ground earth.

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Building Structure :-

Basically in building structures there are 2 types of structures :-

1) Framed Structure
2) load Bearing Structure

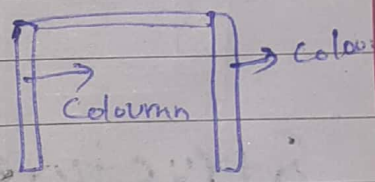
Component of framed building structure :-

This building has ground floor, first floor, second floor and terrace floor.

The vertical elements are the Coloums.

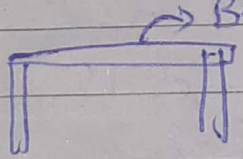
Coloumns :-

The vertical elements are the Coloums



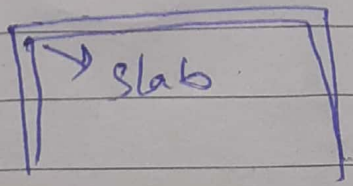
Beams :-

The horizontal bands are the beams



Slab :-

The flat surface on which you can stand is the Slab



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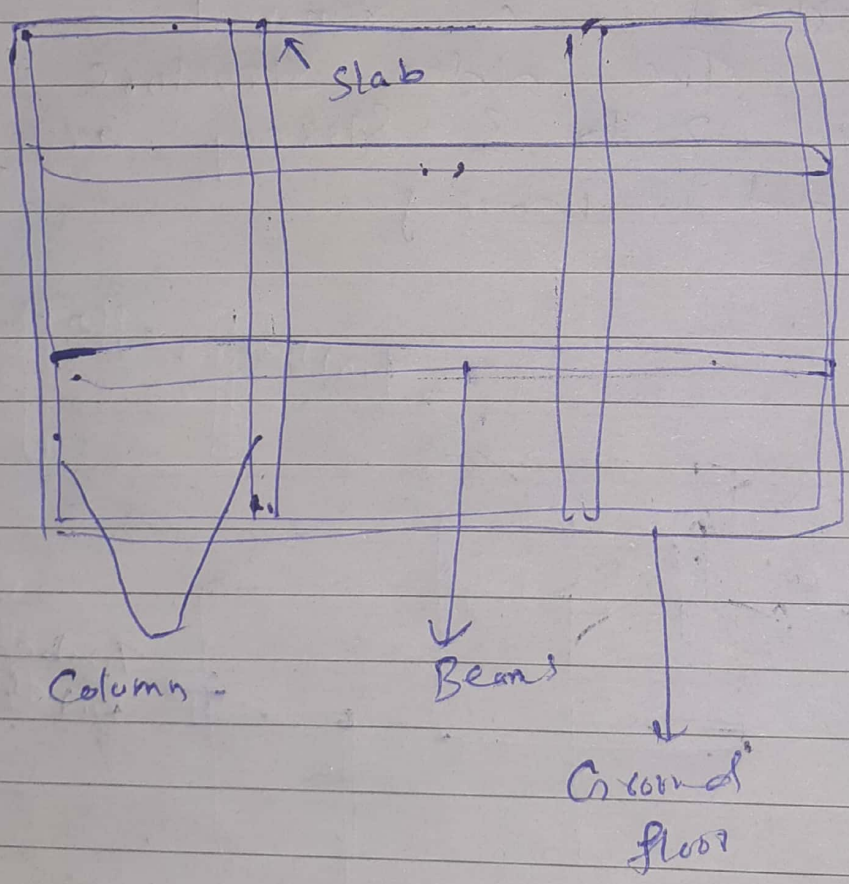
Walls, windows are added later to give protection to inhabitants.

The loads such as human beings, furniture etc is carried by this frame.

The wall have no role except protecting the inhabitants from weather.

This is a completed building as a framed building.



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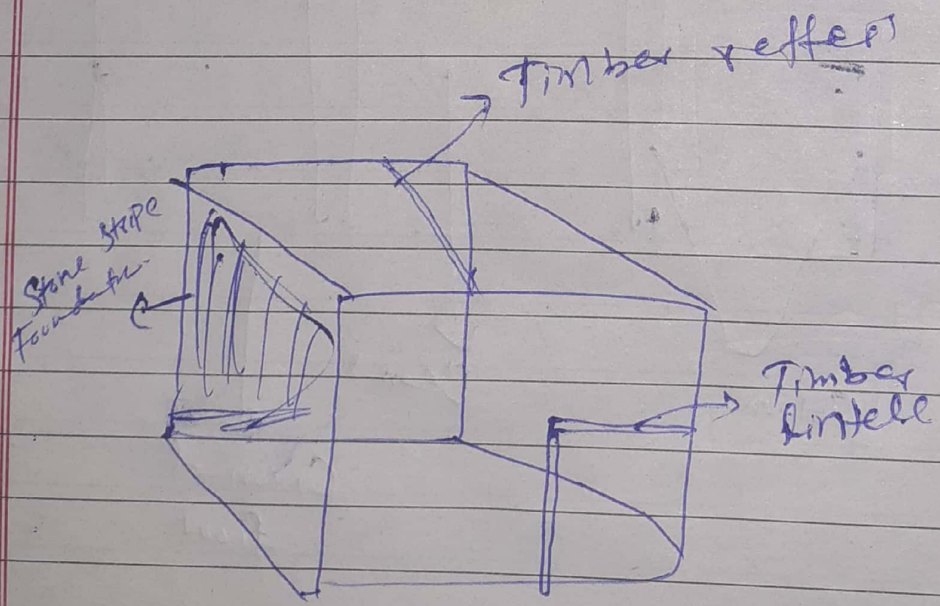
1) Load bearing Structure:-

In load bearing structure instead of colooms and beams, it has walls taking the load.

Here the walls play a dual role of taking loads and protecting the inhabitants. the walls are generally bricks or stone.

Since the wall take the load they cannot be moved or removed.

The older structure of 2 to 3 storey are load bearing.



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2) Framed building :-

Most of framed building are constructed in rainforced Cement Concrete (RCC).

RCC is a composite meterial that is a made of Concrete + Steel.

Concrete is obtained by mixing cement, Sand, small stone chips etc.

Steel used is called reinforcement.

Rainforcement take care of the weaknesses the Concrete has and hence results in economical Composite material.

Principles :-

Components :-

⇒ Coloumn.

⇒ Bean

Taking off items :

Concrete works in Column/Beam.

Formwork to Sides of C/B.

Rainforcement work in C/B (N.A).

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Taking off 1st SL—

Rainforced Concrete Column

Concreting works:

Rainforced concrete grade in Column (m^3).

formworks

. Sawn formwork to Sides of Column (m^2).

Rainforced Concrete beam.

Concreting works

Rainforced Concrete Grade —in beam (m^3)

formwork:

Sawn formwork of Sides of beam (m^2).

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Q = 4 :-

Damp Proof Course :-

In order to prevent the entry of damp or moisture in the building, the damp proof course (D.P.C) is provided at various levels of the entry of damp into building. At present, generally all the building de given the treatment of damp-proofing. Thus the provision of damp-proof course prevents the entry of moisture from walls, floors and basement of a building.

Causes of Dampness :-

⇒ The faulty and inappropriate design of the structure can be major causes of the dampness in the building.

⇒ unskilled labours can lead to poor workmanship

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which further results in faulty Construction.

⇒ poor materials used for the construction of building.

Effects of dampness in building:-

⇒ The building suffering from dampness causes unhealthy and difficult living and working conditions for the residents

⇒ It may results in Softening and crumbing of plaster.

⇒ Efflorescence is manly caused due to dampness which results in the disintegration of tiles, bricks, stones etc.

⇒ it may cause bleaching and flaking of the paint which result in the formation of coloured patches on wall surfaces.

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Materials used for DPC :-

⇒ Hot bitumen.
⇒ Mastic asphalt.
⇒ Bitumen or Asphaltic felts.
⇒ Metal Sheets.
⇒ Combination of Sheets & Felts.
⇒ Stones.
⇒ Morter.
⇒ Bricks.
⇒ Cement Concrete.
⇒ Plastic Sheets.

Characteristics of DPC :-

They should be perfectly impervious.

Meterials used for damp proofing course should be durable.

They should be sufficiently strong and capable of resisting superimposed loads coming on it.

It should remain steady in its position when once applied.

The meterial should not be costly and easily available

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Principles of DPC :-

⇒ Damp proofing course should be so laid that it should provide continous projection.

⇒ It is horizontal or vertical.

⇒ Horizontal damp proofing course should cover the full thickness of wall, excluding rendering.

⇒ The damp proof course should not be kept exposed on the wall surface.

⇒ When a horizontal damp proof course is continued to vertical face, a cement concrete fillet of about 75 mm radius should provide a curve.