Summer Fall 2020

Final term

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Sec :- B

Semester:- 4th

Deptt:- (BE) Civil Engineering

Subject :- Engineering Drawing and Graphics

Submitted to:- Sir Nadeem

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Q1.)

What are the various Components of plumbing system of a building? What precautions should be ensured in provision of plumbing system of a multi-storey residential building?

Plumbing System:-

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

Components of Plumbing System:-

1) Pipes:-

a) Water Supply pipes:-

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

for water Supply pipes materials used are galvarized iron, copper, stanless steal, rigid PVC, UPVC, CPVC, PPPC etc.

b.) Copper pipe:-

Copper pipe are easier to assemble because in its popular form it does not require threading. There are three types of copper pipe of plumbing tube X, Y & Z. Mostly types of pipe are following:-

i.) Galvanized Iron.
ii.) Plastic pipe.
iii.) Low density Polyethylene.
iv.) High density Polyethylene.
v.) Polyethylene pipe
vi.) Composite pipe
vii.) Cement pipe.

ii) Joints:-

Connections between two pipes either of the same materials or different materials are made in different ways either fitting solvent capillary joints or compression joint are used.

iii) Fittings:-

Fittings not only the pipes together but turn corners branch out in several directions.

Types:-

i) Elbow
ii) Coupling
iii) Union
iv) Reducer
v) Tee
vi) Cross fittings
vii) Trap primers
viii) Combination Tee
etc.

iv) Fastening Pipes:-

Floored connection should not be confused with compression, Connectors with which they are generally not interchangable

v) Values:-

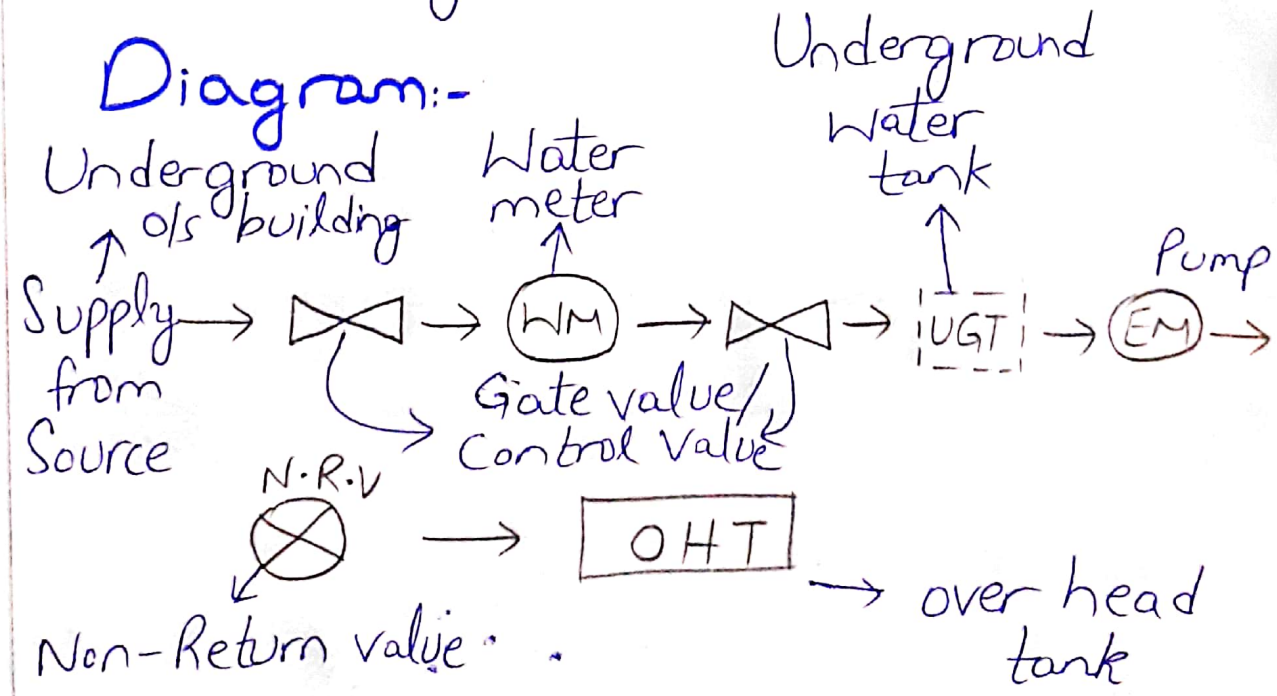
A Value is a device that regulates flow of substance by opening, closing or partially obstructing various passage ways.

Precautions 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 buildings have particular needs in the design of their Sanitary drainage and venting system water main supply pressure to (8-12) meter (25-40 feet) can supply pressure a typical two storey building but higher building may need pressure bister System.

Diagram:-



Q2.)

What is the importance of using symbols in drawings? Draw various symbols connection for sewerage and electrical system used in buildings?

Symbols and its Importance:-

We use symbols to represent electrical, plumbing, sanitary, gas, HVAC etc equipments/ fixture.

These are symbols only and they do not represent the shape, size, color/ texture

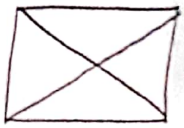
of the actual item.

Drawing symbols form an important role in any drawings and help to define elements such as floor levels, lighting types and service locations.

Sewerage Symbols :-

1.) → S → S →

Main Sewerage line

2.) → S →  → S →

MH

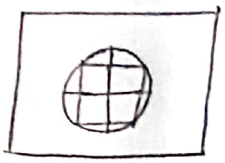
Man Hole

3.) → S → G.T → S →

Gully Trap

4.) → S → Gr.T → S →

Grease Trap

5.) → S →  → S →

FD

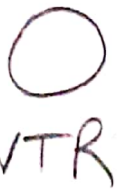
Floor Drain.

6.) → S → 

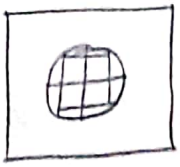
Waste Pipe.

7.) → S → 

Soil Pipe

8.) → S → 

Vent through the Roof

9.) → S →  → S →

RD

Roof Drain

10.) → S → 

Down Pipe for Rain Water

Electrical Symbols:-

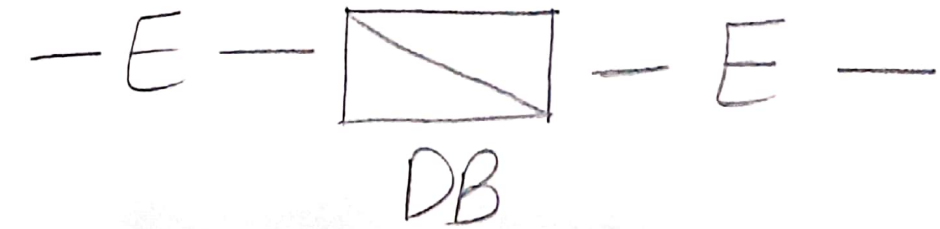
1.) —E— E —

Main Supply line.

2.) —E—  —E—

MCB

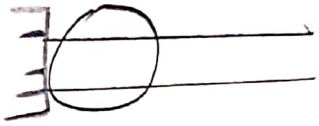
Main Control Board.

3.) 

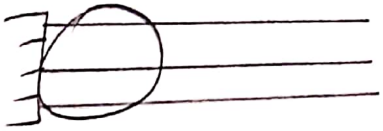
Distribution Board

4.) 

Switch Board

5.) 

Electrical Outlet – 5 Amps.

6.) 

Electrical Outlet – 15 Amps.

7.)  Gate Light

8.)  Security Light

9.) 

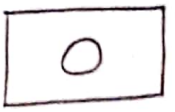
Telephone Socket

10.) 
Bell Push

11.) 

Call Bell

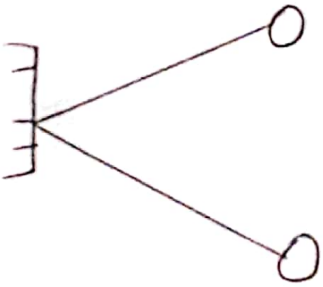
12.)
Mirror Light

13.) 

Ceiling Mounted/ Porch Light

14.) 
Ceiling Mounted/ Globe Light

15.) 
Wall Mounted/Globe Light.

16.) 
Wall Mounted/ Fancy Light

17.) 
Switch (Single Pole)

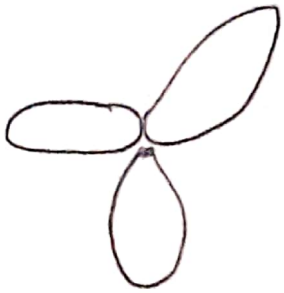
18.) $_{2}$ Switch (Double pole).

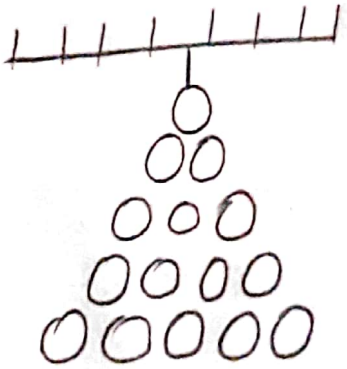
19.) 

Tube Light
4ft Long.

20.) 

Exhaust Fan

21.) 
Ceiling Fan
(48"-56" Dia).

22.) 
: Chandelier

Q3.)

Briefly describe various components of FRAME structure along with Diagrams?

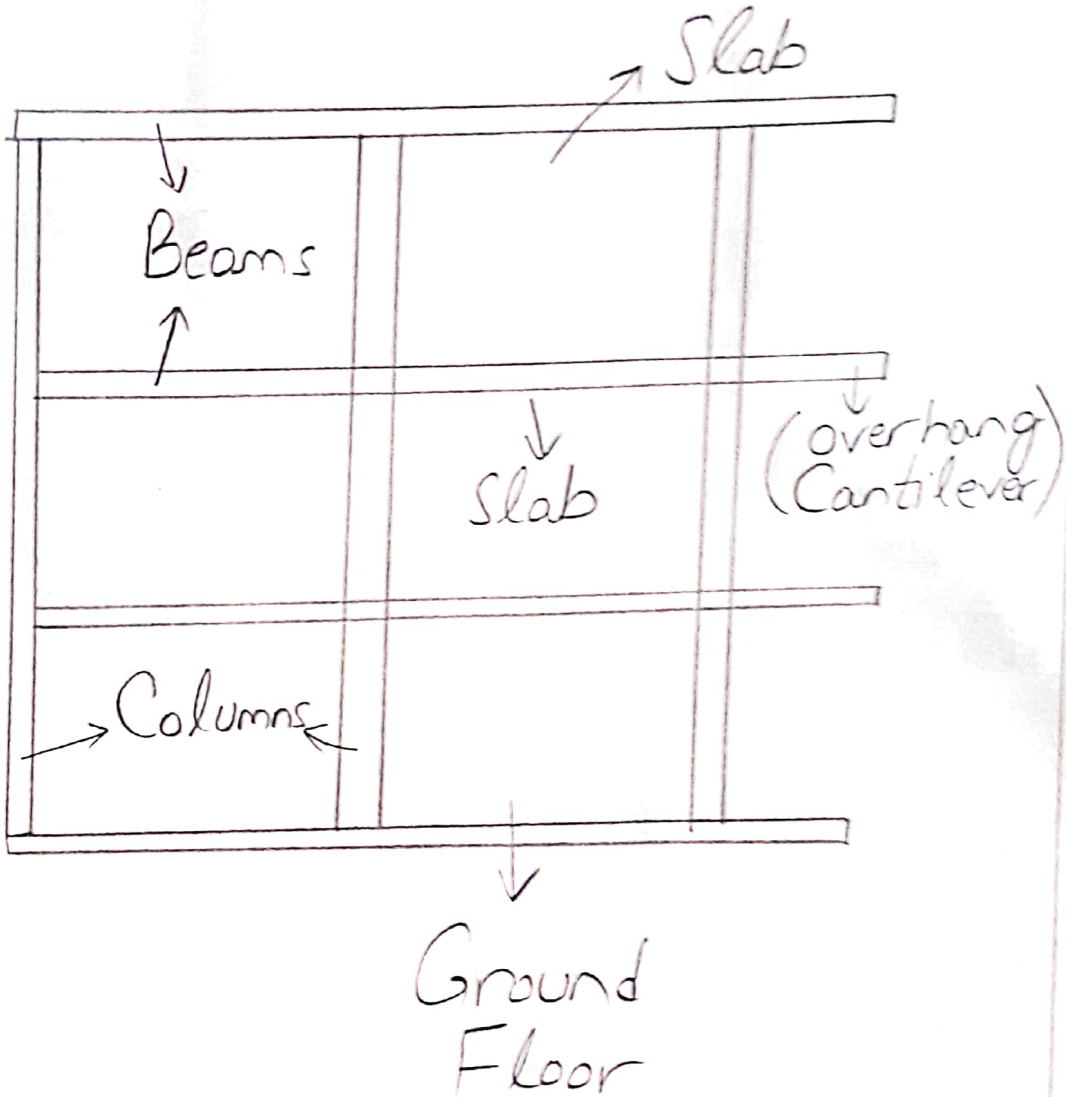
Components of FRAME Structure:-

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

The vertical elements are the columns.

The horizontal elements are the beams.

The flat surface on which you can stand is the slab.



Under Construction Building

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

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

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

Materials used in framed Structure:-

Most of the framed buildings are constructed in Reinforced Cement Concrete (RCC).

RCC is a Composite material that is made of concrete + steel.

Concrete is obtained by mixing cement, sand, small stone chips

Water in required proportion.

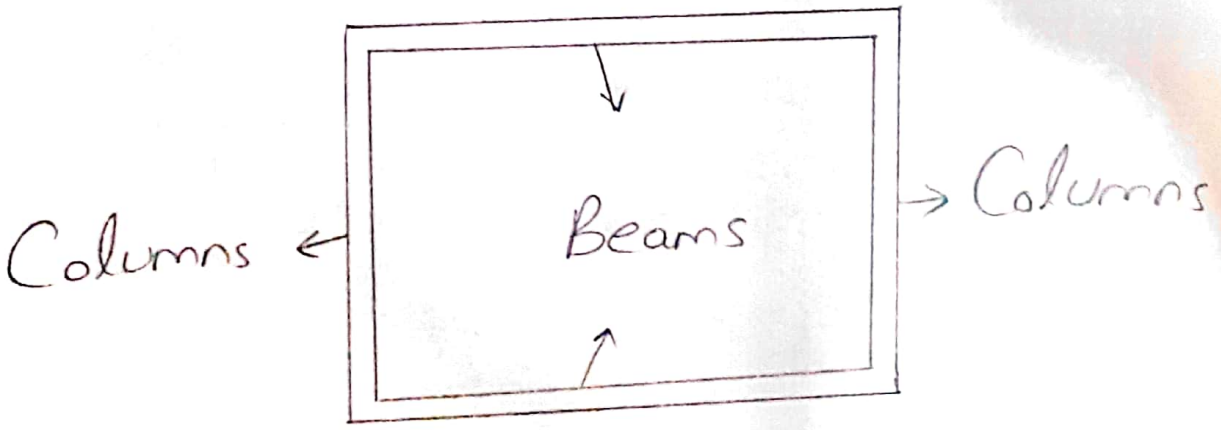
Principles:-

Components:-

a.) Beams b.) Columns

Taking off items:-

a.) Concrete works in Columns/beam
b.) Form work to sides of Columns/ beam.
c.) Reinforcement work in Column/ beam.



Q4.)

What is Importance and Characteristics of Damp Proof Course?

Damp Proof Course:-

DPC to be provided in walls consists of 1-in to 3-in thick layer of P.C.C (1:2:4) over which two coats of hot bitumen are applied.

The top of DPC is made up of in level with the ground floor top of the building.

Materials Used for DPC:-

i.) Hot bitumen ii.) Stones
iii.) Mastic asphalt iv.) Mortar.
v.) Metal sheets vi.) Bricks.
vii.) Cement Concrete.
viii.) Plastic sheets.
ix.) Bituminous or Asphaltic felts.
x.) Combination of sheets and felts.

Characteristics of DPC:-

1.) They should be perfectly impervious.
2.) Materials used for damp proofing course should be durable.
3.) They should be sufficiently

Strong and capable of resisting superimposed loads coming on it.

4.) It should be flexible so that it can accommodate the structural movements without any fracture.

5.) It should remain steady in its position when once applied.

6.) The materials should not be costly and easily available.

Importance of DPC:-

1.) Damp proofing course should be so laid that it should provide continuous projection.

2.) It should be horizontal or vertical.

3.) Horizontal damp Proofing course should cover the full thickness of walls, excluding renderings.

4.) At junctions and the corners of the walls, the horizontal DPC should be laid continuous.

5.) The mortar bed supporting the DPC should be even and levelled and should be free from projections so that the DPC is not damaged.