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SEC : B

SUBJECT : Civil engineering draw  
and Graphics (Theory)

SUBMITTED TO: Engg Nadeem Ullah

DEPTT :- BE Civil

Q2:-


Ans:-

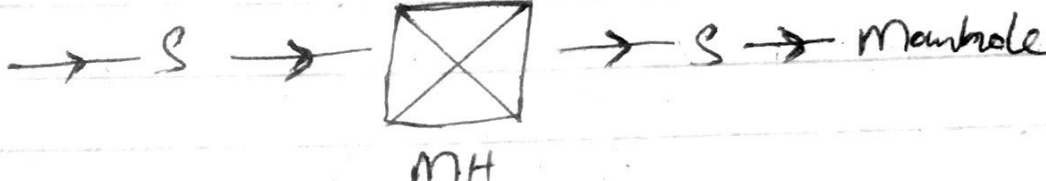
### SYMBOLS:-

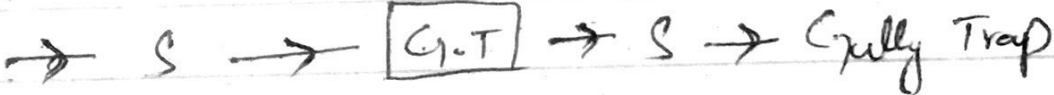
- ⇒ Just as in chemistry we use symbols to represent elements, in architectural floor plans we use symbols to represent electrical plumbing, sanitary, gas, HVAC etc. equipments / fixtures.
- ⇒ These are symbols only and they do not represent the shape, size, color / texture of the actual item.
- ⇒ The description of the specific items is covered in the specification documents which forms an integral part of the working drawings.
- ⇒ Standard abbreviations & nomenclature are considered part of symbol.

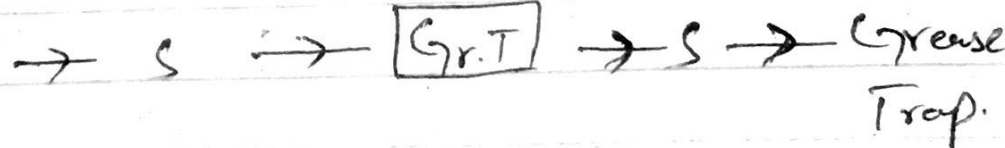
⇒ A floor plan, therefore usually contains a list of symbols/legends being used on that particular floor plan.

## SEWERAGE SYMBOLS:

1)  Main Sewerage Line

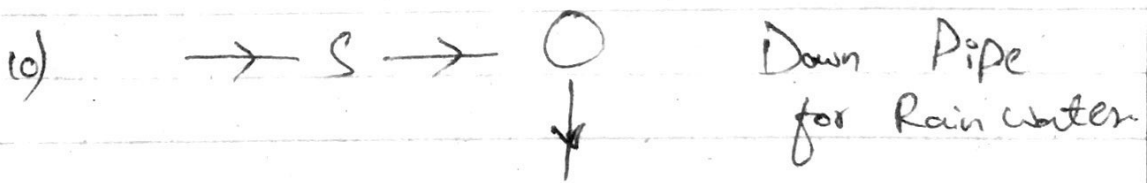
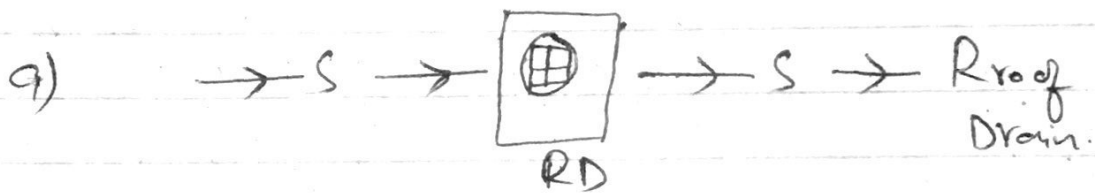
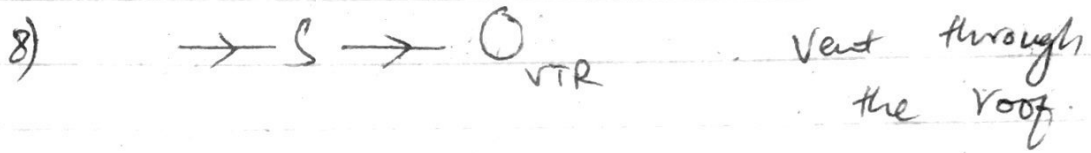
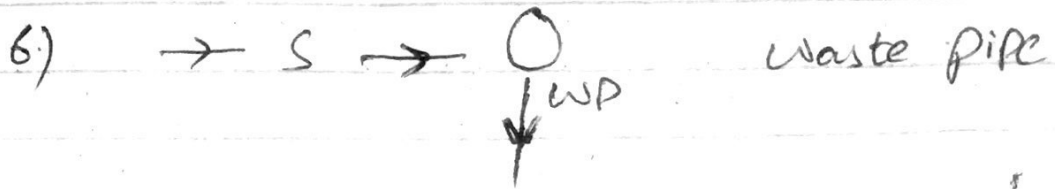
2)  Manhole

3)  Gully Trap

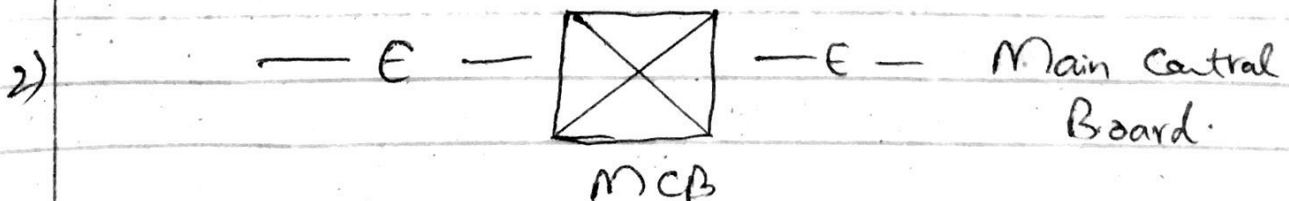
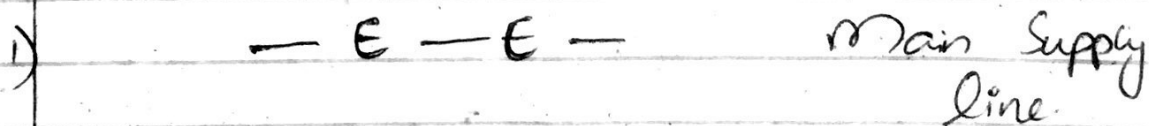
4)  Grease Trap.

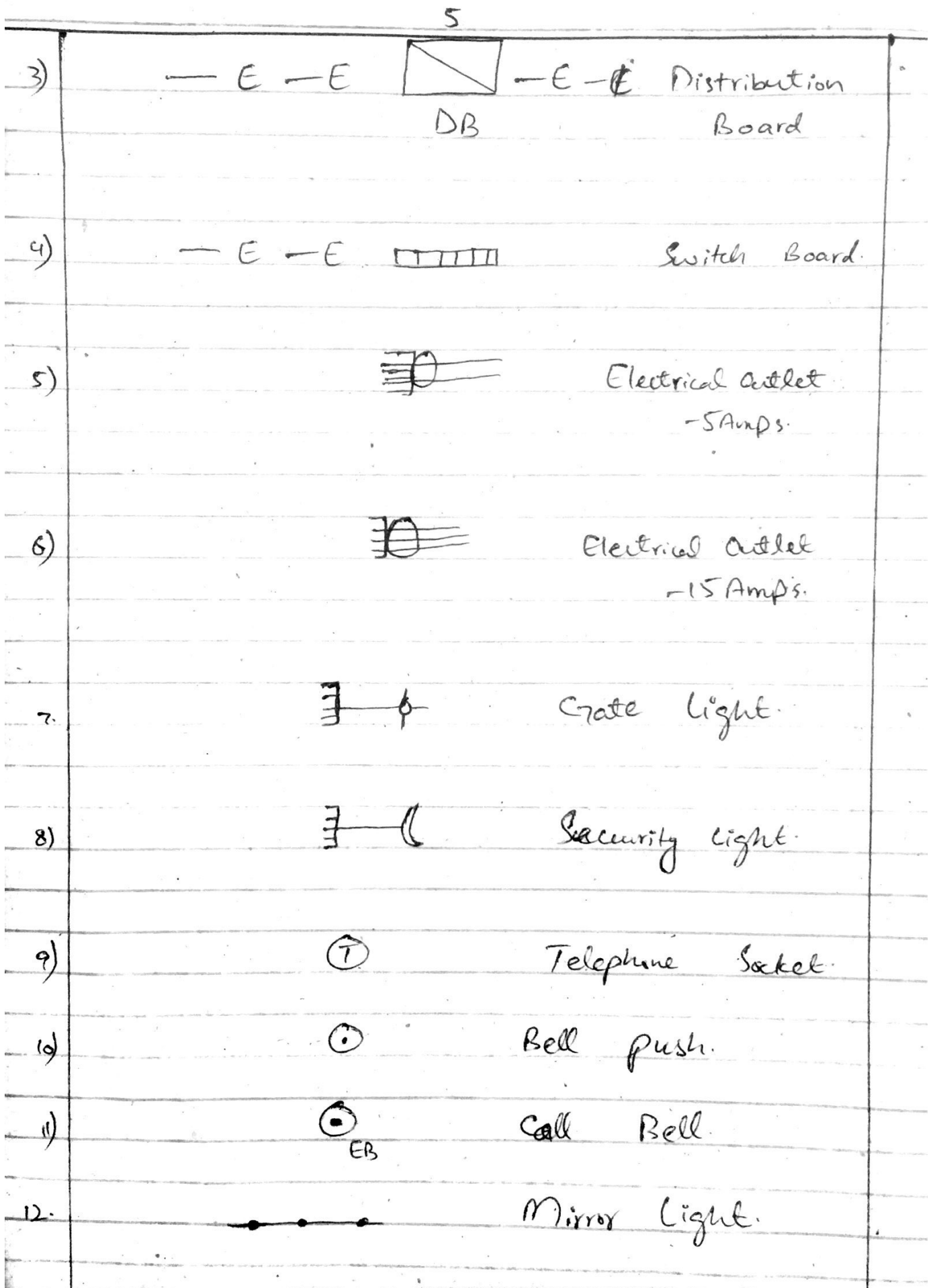
5)  Floor Drain

4)



★ ELECTRICAL SYMBOLS:-





13)



Ceiling Mounted/Porch  
light.

14.



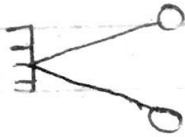
Ceiling Mounted/Globe  
light.

15)



Wall Mounted.

16.



Wall mounted/Fancy  
light.

17)



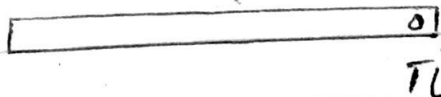
Switch (single Pole)

18)



Switch (Double Pole)

19.



Tube Light - 4ft long.

TL

20



Exhaust Fan.

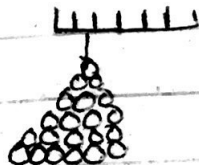
EF

21)



Ceiling Fan (48"-56" Dia)

22)



Chandelier.



Q4) P  
Ans:-

## 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 usually 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 as fined on walls, for water supply

Pipes ~~intern~~ material used is galvanized iron, copper stainless steel rigid pre, UPVC, CPVC, PPRC, KITEC, UNIPIDE.

ii) Copper Pipes:

Copper pipes are easier to assemble because in its popular form it does not require threading. There are three types of copper water pipes of plumbing tube x, y & z.

Mostly types of pipes are following.

- iii) Galvanized Iron
- iv) Plastic Pipe
- v) Low density polyethylene
- vi) High density polyethylene
- vii) Polyethylene pipes
- viii) Rigid
- ix) Rigid polyvinyl chloride.
- x) Composite pipe
- xi) Cement pipe.



## 2) Joints:-

Connection between two pipes either of the same materials or different material is made in different ways either fitting or compression joint are used.

## 3) Fittings:-

Fittings not only the pipes together but turns corners branch out in several direction.

Types:-

- 1) Elbow
- 2) Coupling.
- 3) Union.
- 4) Reducer
- 5) Tee
- 6) Cross fittings.
- 7) Trap primers.
- 8) Combinations Tee etc.

## 4) Fastening Pipes:-

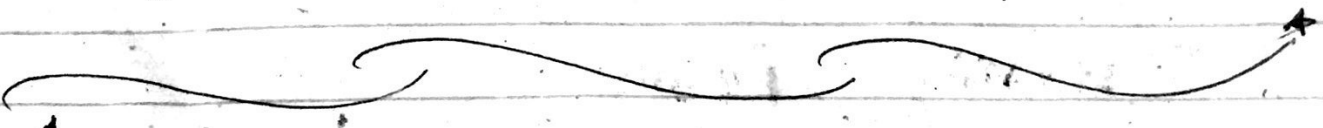
Flared connection should not be confused with compression, connectors with which they are generally not interchangeable.

Valves:

A valve is a device that regulated flow of substance by opening or partially obstructing various passageway. closing

For Multi - Storey Buildings:

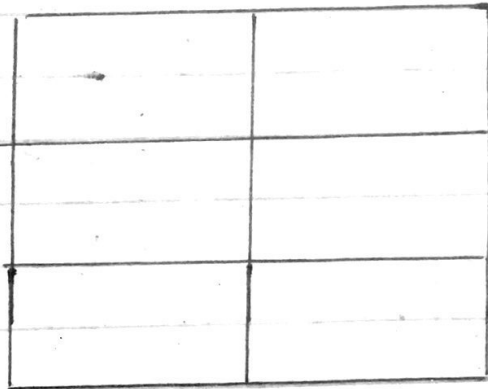
For plumbing purpose the term multi storey is applied to buildings that are too all to be supplied throughout by the normal pressure in the public water mains. These building have particular needs in the design of their venting system water main supply pressure to (8-12) meters (25-40) feet can supply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



Q 3):

Ans**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 loading.

\* **STRUCTURE:**

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

**Building Structure:-**

Basically in buildings structures there are 2 types of structures.

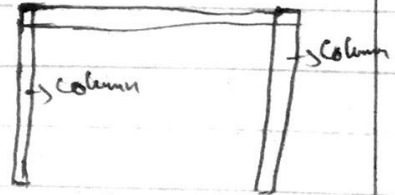
- 1) Framed Structure.
- 2) Load bearing Structure.

### Component of framed building structure

This building has ground floor, first floor, second floor and terrace floor. The vertical elements are the columns.

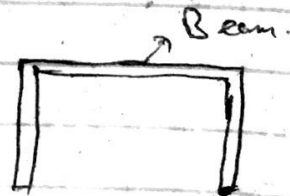
#### • Columns:-

The vertical elements are the columns.



#### • Beams:-

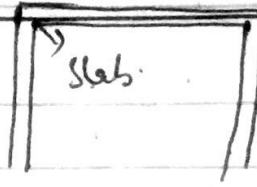
The horizontal bands are the beams.



#### • Slab:-

The flat surface on which you can stand is the

Slab.

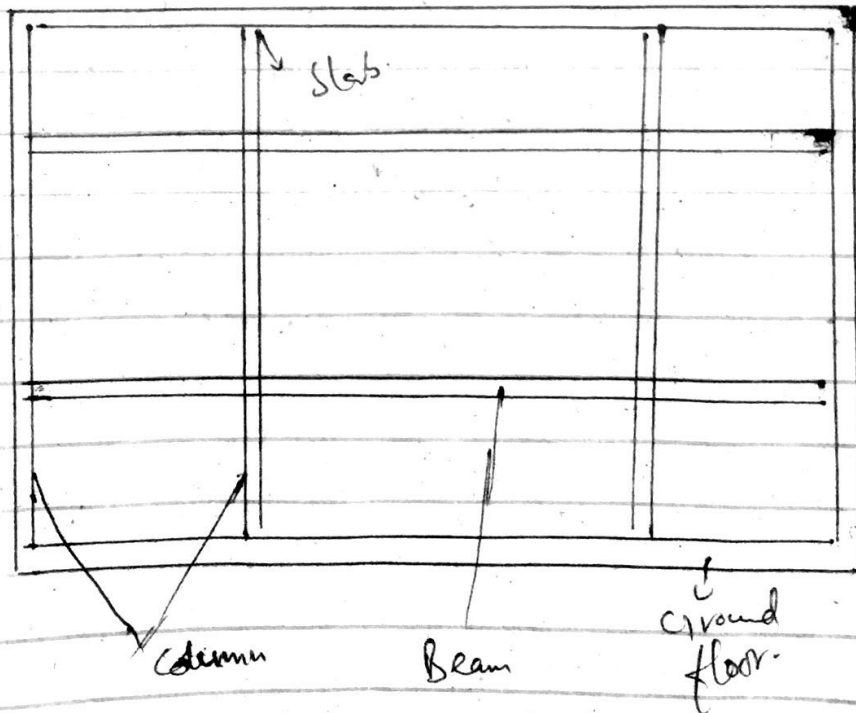


Wall, window are added later to give protection to inhabitants.

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

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

This is a completed building as a framed building.



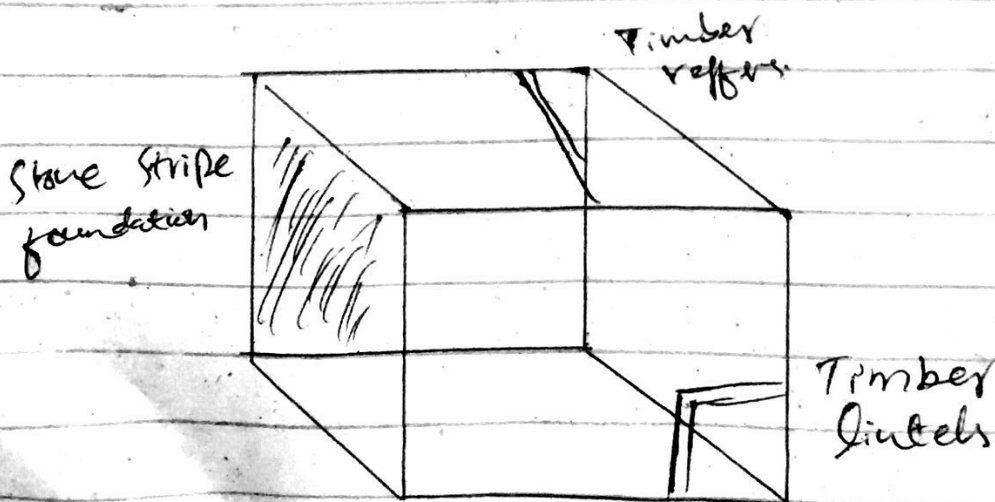
# Load bearing Structure.

In load bearing structure intend of columns and become it has walls taking the load.

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

Since the wall take the load they cannot be moved, ore removed.

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



## 2) Framed building:

Most of framed building 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 etc. Steel used is called reinforcement.

Reinforcement take care of the weaknesses the concrete has and hence results in economical composite materials.

### Principles:

#### Components.

→ Columns

→ Beam.

Taking off items:

Concrete works in Column/Beam.

Formwork to sides of C/B

Reinforcement work in C/B

(NA)



Q4. What is the importance and characteristics of Damp Proof Course?

Ans. 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 to various levels of the entry of damp into building. At present, generally all the buildings are 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:-

Dampness in the building is due to one or more of the following reasons mentioned below:

- ★ The faulty and inappropriate design of the structure can be the major cause



of dampness in the building.

- ★ Unskilled labours can lead to poor workmanship which further results in faulty construction.
- ★ Poor materials used for the construction of building.
- ★ All of the above causes results in rising of moisture from the ground, rain water travels from wall tops if proper water-proofing is not done, condensation, poor drainage, imperfect orientation, imperfect roof slope etc.

### EFFECTS OF DAMPNESS IN BUILDING:-

- ★ The building suffering from dampness causes unhealthy and difficult living and working conditions for the residents.
- ★ It may result in softening and crumbling of plaster.
- ★ Efflorescence is mainly caused due to dampness which result in

disintegration of tiles, bricks, stones etc and reduce strength of building.

★ It may cause bleaching and flaking of the paint which results in the formation of coloured patches on the wall surfaces and ceilings.

★ Metals used in the construction of building may get corroded.

★ If wooden (timber) items in the building such as furniture or cupboard get in contact with dampness section it may get deteriorated.

★ Dampness also promotes the growth of termites which is again a bad sign for timber items.

### MATERIALS USED FOR D.P.C.:-

★ Hot bitumen

★ Mastic asphalt

★ Bituminous or Asphaltic felts.

★ Metal sheets

- ★ Combination of sheets and felts.
- ★ Stones
- ★ Bricks
- ★ Mortar
- ★ Cement concrete
- ★ Plastic sheets

### IDEAL CHARACTERISTICS OF DAMP PROOFING MATERIALS:-

- ★ They should be perfectly impervious
- ★ Materials should be durable.
- ★ They should be sufficiently strong and capable of resisting super-imposed loads coming on it.
- ★ It should be flexible so that it can accommodate the structural movement without any fracture.
- ★ It should remain steady in its position when once applied.
- ★ The material should not be costly and easily available.

## GENERAL PRINCIPLES WHILE LAYING

### D.P.C.:-

It should be so laid that it should provide continuous projection.

It should be horizontal or vertical.

Horizontal D.P.C. should cover the full thickness of walls, excluding renderings.

D.P.C. should not be kept exposed on the wall surface, otherwise it may get damaged during finishing work.

At junctions and corners of walls, horizontal D.P.C. should be laid continuously.

The mortar bed supporting the D.P.C. should be even and levelled and should be free from projections so that D.P.C. is not damaged.