

Third year

IMPERMEABLE MATERIAL & CONSTRUCTION

Note: Answer all the following questions:

- Q.1. Explain the Paving, Flooring and wall tiles (3)
- Q.2. Explain the various types of joints used in masonry (3)
- Q.3. Draw the details of various types of joints (5)
  - i. Carrying details. ii. Sinking details iii. Horizontal & vertical joints
  - iv. Tensile & external angle
- Q.4. Explain any two types of position wall with sketches. (3)

Answer 1. Roof tiles are used to serve as covering for pitched roof. Various types of roof tiles are available in the market. They are as follows.

1. Alabaster tiles - Made from selected clay. Moulding is done under pressure with machines. Burning is performed in kilns at 1100°C. They are made for ridge, hip and valley positions. These tiles have corrugations and when placed in position, a side lap of one or two corrugations is formed.

2. Flat tiles They are ordinary tiles. To fix them on battens two or more holes are provided on their surface. They are prepared with the help of a mould.

3. Flamish tiles These tiles have got the shape of gutter S and prepared with the help of a mould. They are covered in shape with base of 100 mm dia.

4. Guna tile They are hollow tapered burnt clay tiles. They are covered in shape with base of 100 mm dia at bottom end and 75 mm dia at the narrower end.

5. Manjara tile These tiles are of flat pattern and are provided with suitable corrugations so that they interlock with each other when placed in position. They are less curved than flat tiles.

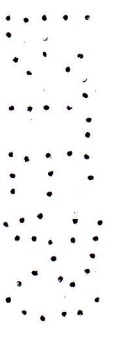
6. Par tiles These tiles are ordinary half round roofing tiles. They are prepared in pattern and are of 20 cm length.

7. Rot tiles These are ordinary half round roofing tiles. They are prepared in pattern and are of 20 cm length. They are given by the pattern. These tiles are semi circular in section and are of 20 cm length.

8. Shape is given by the pattern These tiles are semi circular in section and are of 20 cm length. They are placed with conical and convex sides up or down alternatively. An overlap of 50 mm is provided at edges.

9. They are placed at edges

10. They are placed at edges



### Flower tiles

Flower tiles are terra cotta tile (baked earth) and are prepared under four distinct operations:  
① Preparation of clay ② Moulding ③ Drying ④ Firing. They are further of two types  
① Passivation of clay and polished terra-cotta  
Passion terra cotta when articles for such clay are burnt in a kiln amongst particles are burnt  
and they leave pores in the articles. Passion terra cotta in fire proof and sound proof materials. It is  
light in weight but structurally weak.  
② Polished terra cotta Articles are burnt at lower temp called 'passivation' and are allowed to cool down. And then  
polished terra cotta articles are burnt at higher temperature about 1200°C  
Dusted terra cotta articles are burnt at higher temperature, double charged, heavy, light, 3D tiles are all three tiles  
coated with glazing compound and vitrified, double charged, heavy, light, 3D tiles are all three tiles  
Cement tile, glazed cement tile, concrete tile are also used for flooring.  
Cement tile, vitrified tile, concrete tile are used for wall or wall for cement for surface  
Cement tile, vitrified tile, concrete tile are used for wall, but very, synthetic

### Wall tiles

Cement tile, glazed cement tile, vitrified tile when used on wall for cement for surface  
are all called wall tile. Normally cement tile are used as compound to form tiles  
are all tile have also come up  
material

### Answer 2

#### (1) Bullet proof glass:

This glass is made of several layers of plate glass and alternate layers consists of vinyl-resin plastic  
The outer layer of plate glass are made thinner than the inner layers, special case in glass for leading  
and cutting of layers during manufacture. The thickness of this layer of glass may vary from 15 mm to 75 mm  
or more

#### (ii) Fibre glass

It is composed of minute glass rods and each glass rod resemble the glass para material in all respect  
It is soft so break and it is flexible in nature. It does not absorb water and it is fire proof  
It can be prepared either in the form of continuous strands just like silk or in the staple form  
just like wool.

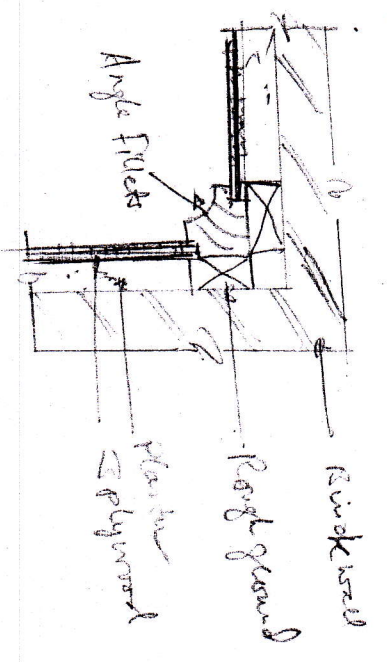
(ii) Furnace glass is prepared in the form of rectangular blocks. Finely ground glass and carbon are the main glass is prepared in the form of a mixture in a furnace. At the time of melting the mixture thoroughly mixed and the mixture is then melted in a furnace. The resulting glass material condenses in a furnace and it can be cut like wood. It is fire proof expands and contracts like wood. The furnace glass heats in water and it can be used as a substitute for cable for use in air conditioning system and electrical insulation. It can be used as a substitute for cable for use in air conditioning and refrigeration industries.

### (iv) Soluble glass.

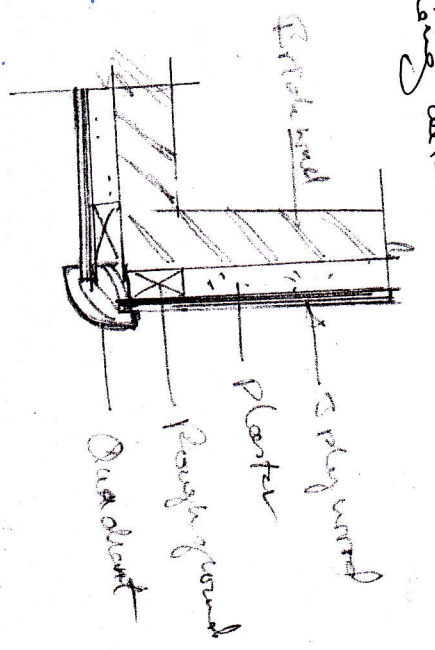
It is prepared by melting quartz sand, grinding and thoroughly mixing it with soda ash. Sodium sulphate or potassium carbonate. The melting is carried out in glass furnace at a temperature between 1300°c to 1400°c and it takes about 7 to 10 hours. The resultant glass mass flows out from the furnace and it set rapidly and breaks up into pieces. Soluble glass in the form of silica glass. This glass is then packed in containers and in the form of liquid, it is then packed in barrels or glass bottles. It is used in preparing acid-resistance cement.

Answer 3

(5)

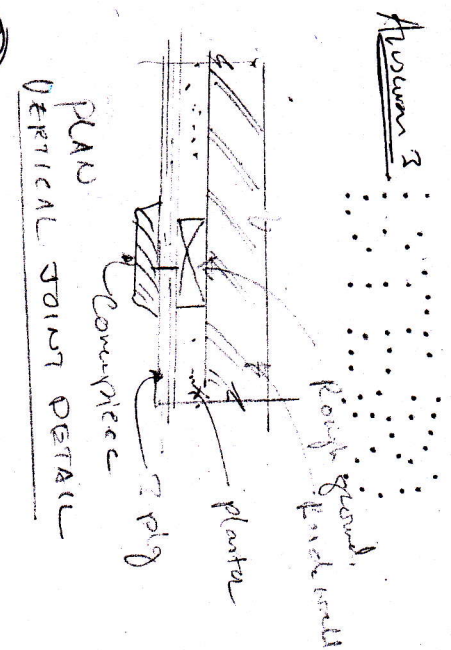


INTERNAL ANGLE PLAN.  
DETAIL



EXTERNAL ANGLE PLAN.  
DETAIL

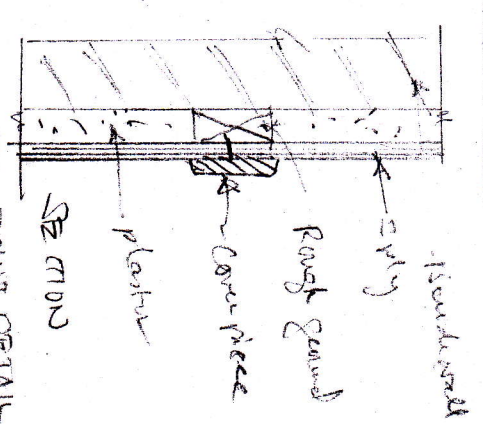
Assum 3



3

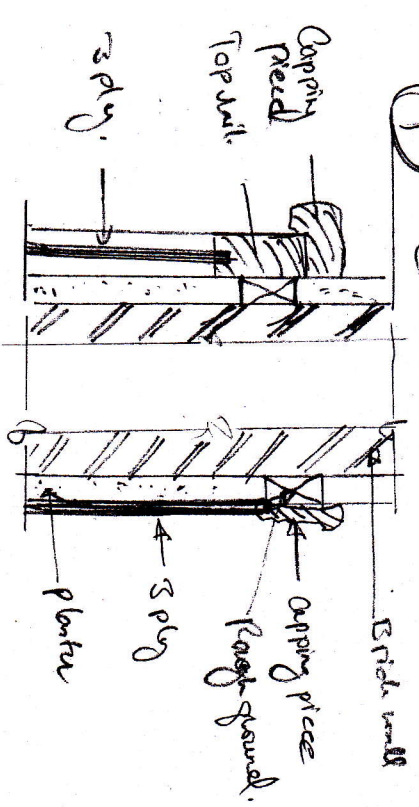
PLAN  
VERTICAL JOINT DETAIL

HORIZONTAL JOINT DETAIL



1

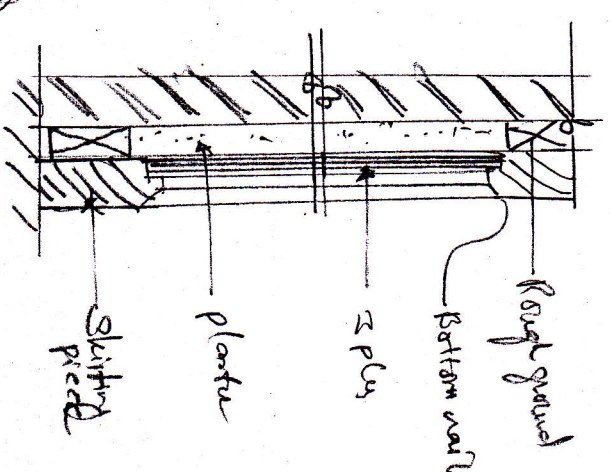
CAPPING DETAILS



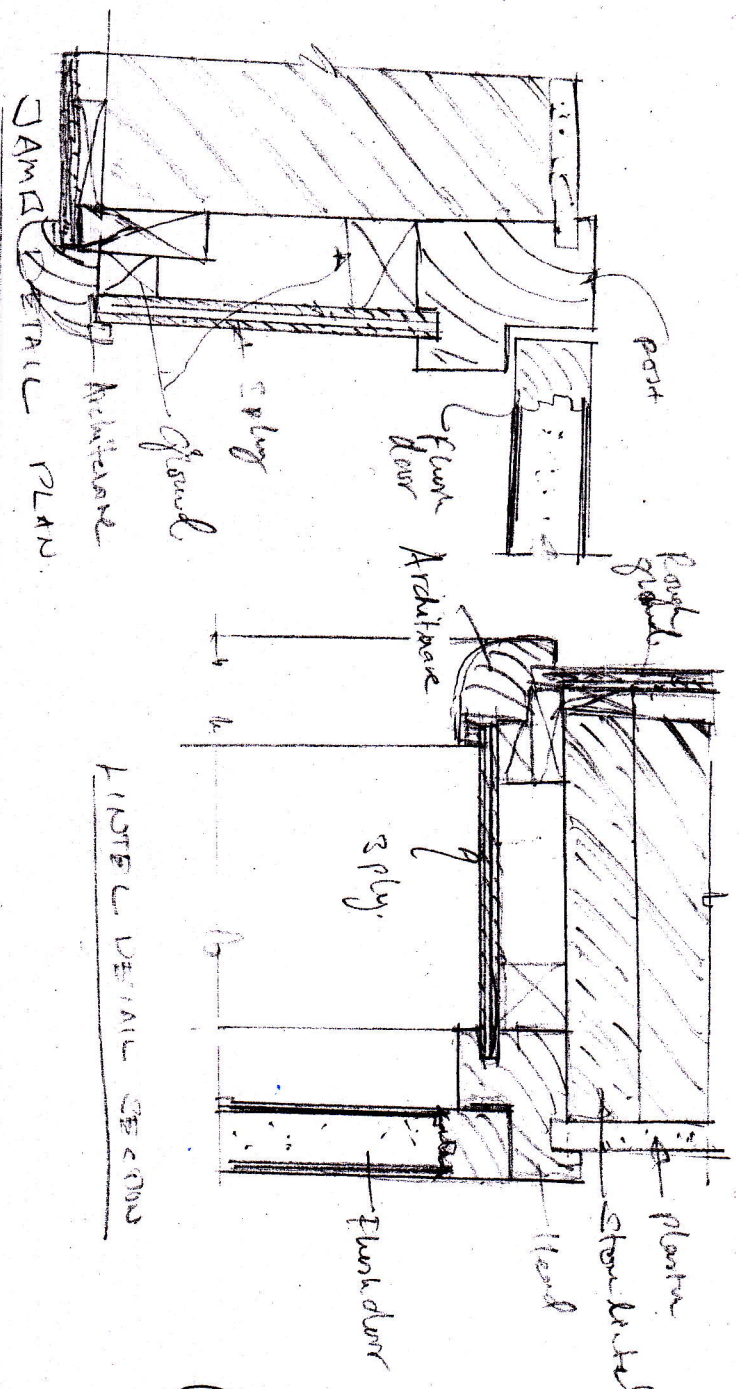
SECTIONAL DETAILS SECTIONAL DETAIL

2

STARTING DETAILS



4



JAMB DETAIL PLAN

LINTEL DETAIL SECTION

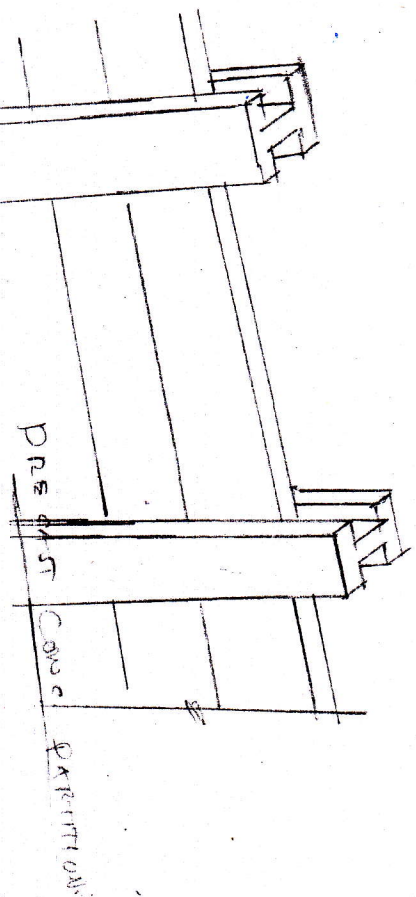
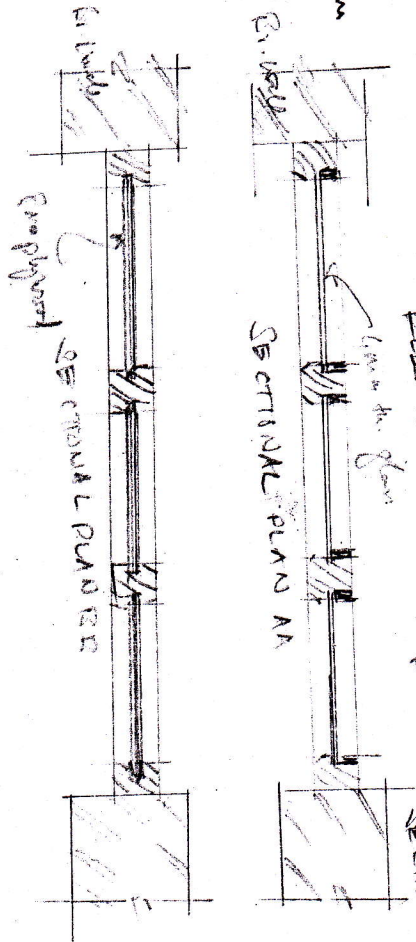
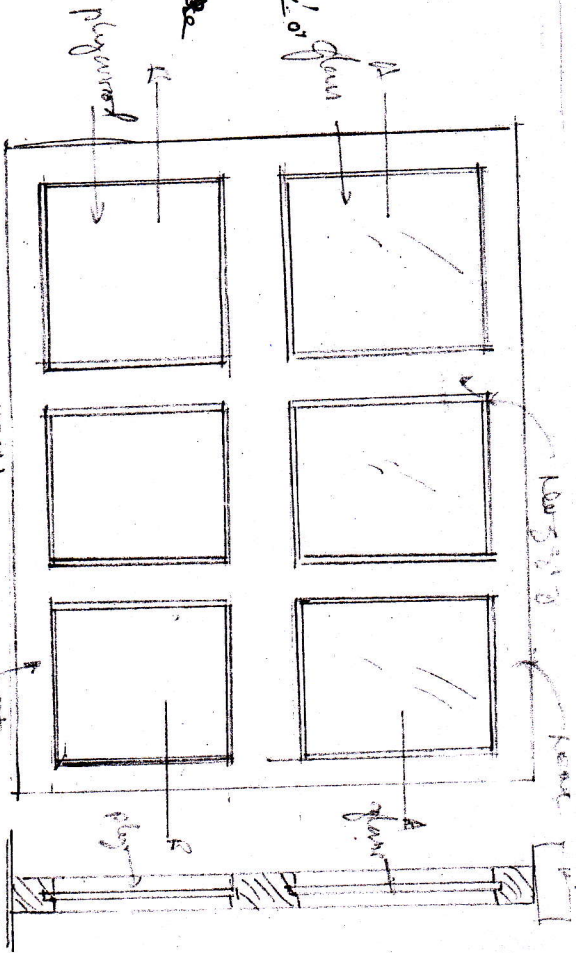
Answer 4 D

Alum & wood partitions.

This is built up in wooden frame work composed of  
 \* This is built up in wooden frame work composed of  
 head, sill, vertical members studs horizontal members  
 known as walling pieces Studs are fixed at 2'-2 1/2' or  
 distance. Walling pieces are at 2' distance.  
 The nailing round on the floor in plan and bottom side  
 the plywood is.

Concrete partitions.

② Concrete partitions can be either precast or cast in situ  
 Concrete partitions can be either precast or cast in situ  
 Special conc. part are used for construction of precast  
 concrete partitions walls. Concrete slabs of thickness 4 cm  
 precast T or L shaped units can also be used  
 used panels are of 100 x 20 x 4 or 80 x 20 x 4 or  
 longer side or shorter side 200 x 20 x 4. They have  
 longer side or shorter side and longer part at  
 upper part and edge and longer part at  
 bottom. The panels are so arranged to avoid  
 continuous vertical joint. 14-15 concrete is used  
 with shutter vibrator coating they are covered  
 for 14 days



(S. L. DUNN 201)