

INSTITUTE OF TEXTILE TECHNOLOGY CHOUDWAR

SESSIONAL EXAMINATION

Answer 5 questions including Q No-7

F. M - 60 Marks
Time - 3hrs

Figures in the right hand margin indicate marks

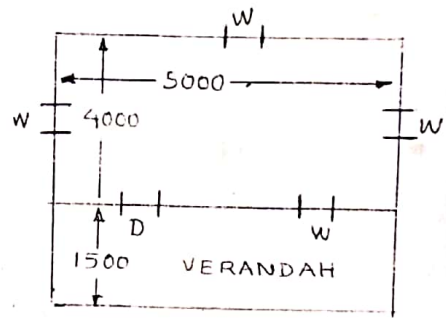
1. Construct a diagonal scale of R.F. = 1:5000 showing metres and long enough to measure up to 800 metres. On the scale show a distance of 586 metres. 10 marks
2. Construct an ellipse by help of Arc of circles method when major axis is 100mm & minor axis is 65mm 10 marks
3. A line is 90mm long makes an angle 35° with HP & 45° with VP its mid point is 20mm above HP & 15mm in front of VP. Draw the projection of the line. 10 marks
4. A hexagonal prism side of base 25mm and axis 62mm long, lies on one of its rectangular faces on HP with its axis perpendicular to VP. Draw its projections when the farther end of the prism is 25mm in front of the VP. 10 marks
5. A right regular hexagonal prism edge of base 20mm and height 50mm, has a circular hole $\phi 20$ mm drilled centrally through it, along its axis. Draw its isometric projection. 10 marks
6. Draw the development of the lateral surface of the hexagonal cut prism of base 40mm and axis is 80mm is resting on HP in such a way that a rectangular face is parallel to VP and inclined at 30° to HP and passing through the top end of an extreme lateral edge of the prism. 10 marks
7. A single room having inside dimension of 4000 x 5000mm has a front verandah of 1500mm wide. It has following specification
 - (i) wall thickness - 300mm -
 - (ii) Plinth height - 600mm -
 - (iii) ceiling height = 3500mm -
 - (iv) Roof slab thickness - 125mm -
 - (v) Door (D) - 1200mm x 2100mm
 - (vi) window (W) = 1200mm x 1500mm
 - (vii) Verandah pillar - 300mm x 300mm
 - (viii) steps - 250 x 150mm x mm
 - (ix) plinth projection - 100mm

Assume other required data

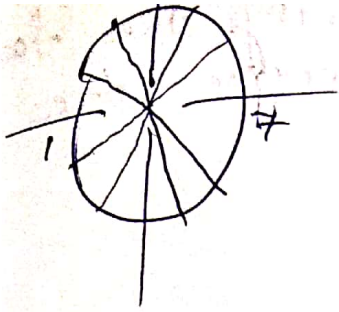
(a) Draw the plan of the building at window sill level 12 marks

(b) Draw the front elevation of the building. 8 marks

take scale - 1:50



=0=



$$2\pi r =$$

$$2 \times \frac{22}{7} \times 25$$

$$= 2 \times 3.141 \times 25$$

$$= 157.$$

Isometric Projection

Isometric Projection is a type of pictorial projection of an object in which all the three dimension of an object are shown in a single view.

1. It gives ~~clear~~ clear picture of an object.

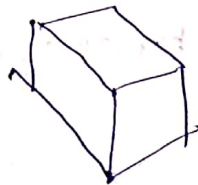


2. It is helpful for proper understanding of an object.

3.

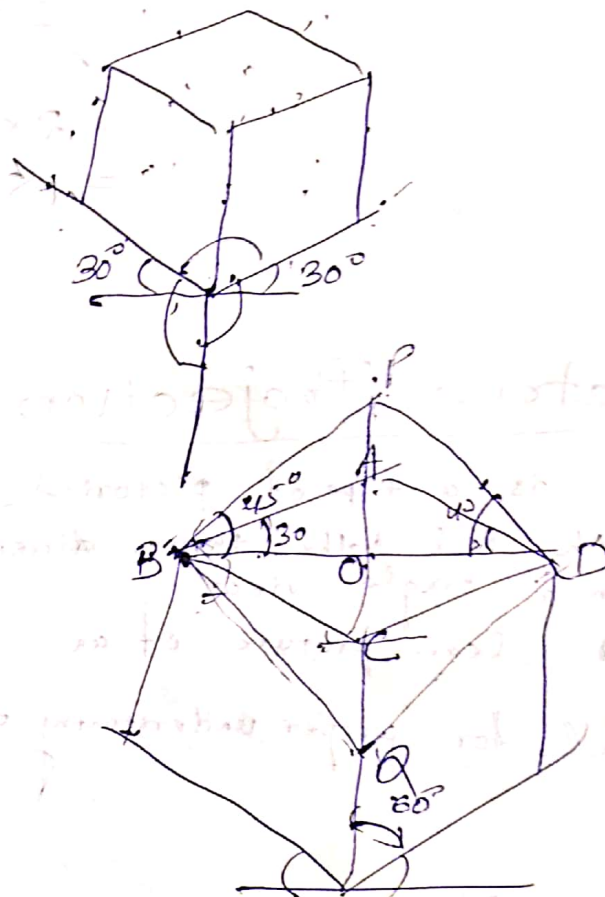
Isos -
equal

Metron
measurement



1. Isometric Scale → It is the scale by which the actual distances are reduced to isometric distance

$$\boxed{50 \text{ isometric length} = \text{true length} \times 0.82}$$
2. Isometric Axes → The 3 lines meeting at a point & making 120° angle with each other are termed as isometric axes.
3. Isometric Lines → The lines parallel to the isometric axes are called isometric lines.
4. Isometric plane → The plane representing the faces of the cube in the isometric projection are called isometric plane.



$BQDP = \text{Square}$

$BD = \text{Diagonal}$

$BP = \text{representing } BA$

$$\Delta ABO =$$

$$\cos 30^\circ =$$

$$\frac{BA}{BO} = \frac{1}{\cos 30^\circ} = \frac{2}{\sqrt{3}}$$

$$\cos 30^\circ = \frac{BO}{B.A} =$$

$$\Delta BPO$$

$$\cos 45^\circ = \frac{BO}{BP}$$

$$\frac{BP}{BO} = \frac{1}{\cos 45^\circ} = \frac{1}{\frac{1}{\sqrt{2}}} = \sqrt{2}$$

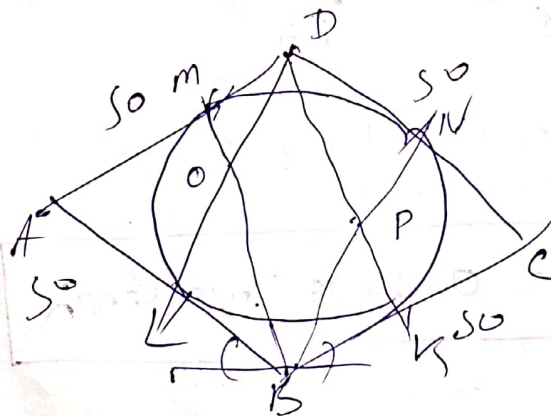
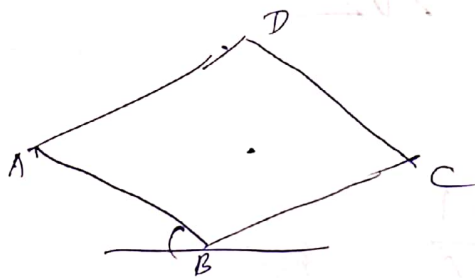
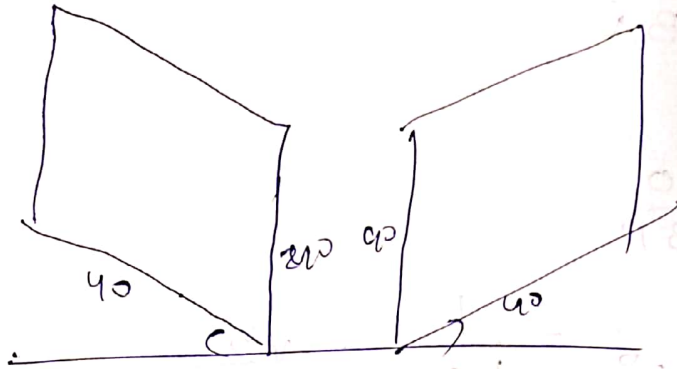
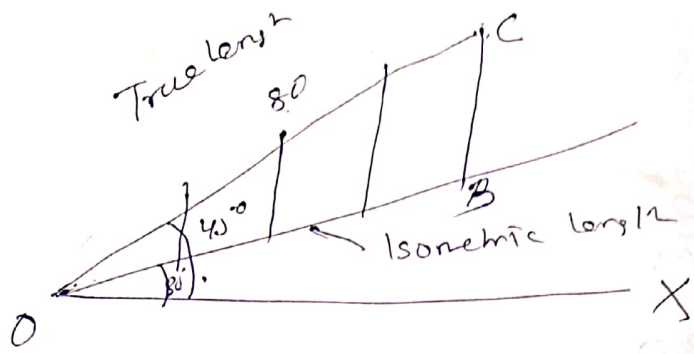
$$\frac{BA}{BP} = \frac{BA}{BO} \times \frac{BO}{BP}$$

$$= \frac{2}{\sqrt{3}} \times \frac{1}{\sqrt{2}}$$

$$= \frac{\sqrt{2} \times \sqrt{2}}{\sqrt{3} \times \sqrt{2}} = \frac{\sqrt{2}}{\sqrt{3}}$$

$$= \frac{1.41}{1.732} = 0.815$$

Isometric length = 0.82 * True Length

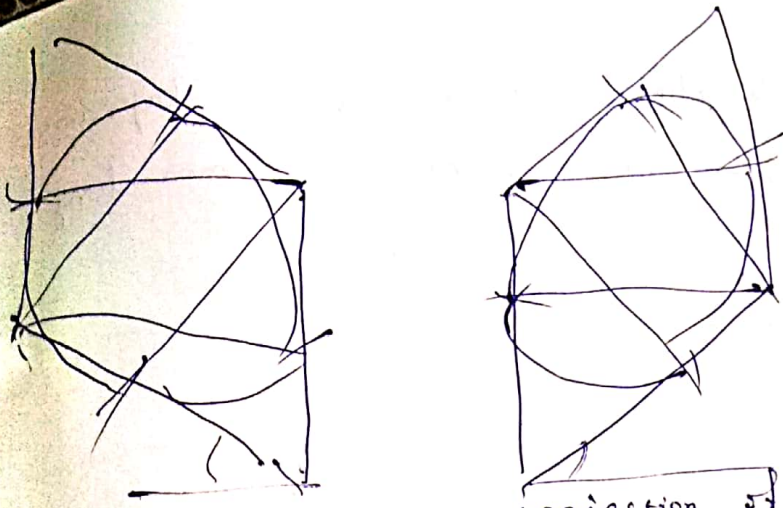


$$\widehat{BM} = \widehat{BN}$$

$$\widehat{DL} = \widehat{DK}$$

$$\widehat{OM} = \widehat{OL}$$

$$\widehat{PN} = \widehat{PK}$$



15/10/14

Q1 Draw the isometric projection of a circle having diameter

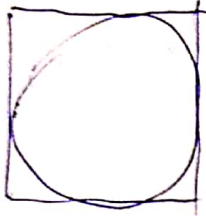
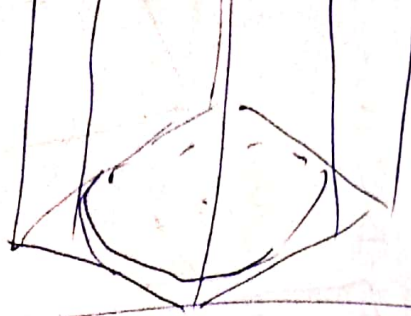
50 mm.

- (i) Isometric view with face horizontal.
- (ii) Isometric view when face vertical. (Right & left both)

Q2 Draw the isometric view of a hexagonal prism with side of base 40 mm & axis 80 mm long. The prism is resting on its base on HP & with an edge of the base parallel to VP.

Q3 Draw the Isometric projection of a right circular cone of base diameter 50 mm & axis 70 mm long when its axis is vertical.

Q4 Draw the Isometric view of a square prism of side of base 50 mm & length 80 mm having axis vertical & horizontal position.



Building Drawing

A ~~bad~~ building is a structure permanent or semipermanent used for the purpose of providing shelter or accommodation & to protect a human being from heat, rain, cold, storm, lightning & snowfall.

Types of building

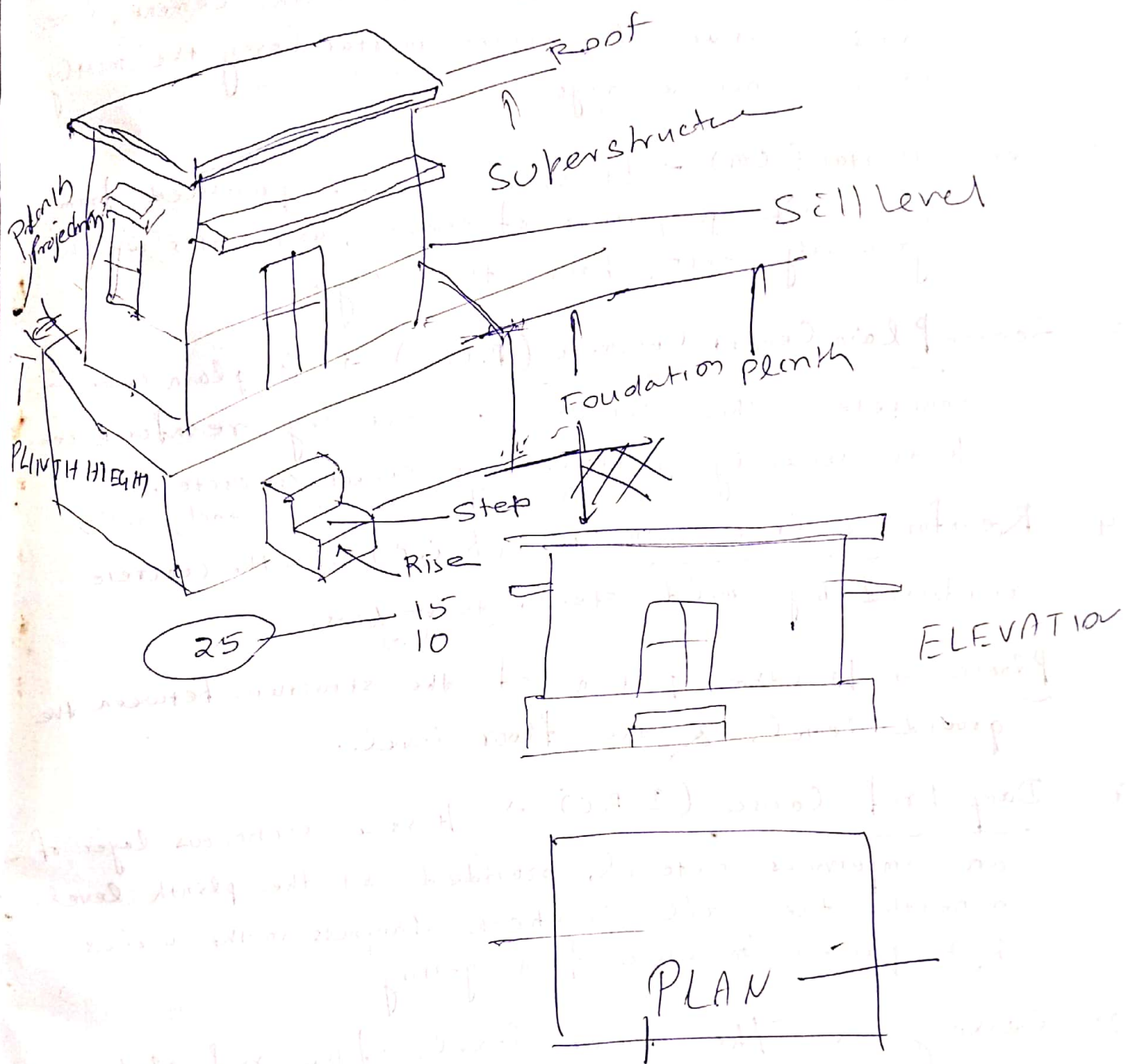
- 1 Residential ~~building~~ building
- 2 Non residential building

Building drawing

It is the art of representing the details of the components of a building in a paper or a drawing. Its aim is to give as much as information by the design engineer to the construction engineer.

Parts of building

- 1 Foundation
- 2 Super structure.
- 3 Roof.



Foundation → It is the ^{most} bottom part of the structure on which the total building is rest.

Superstructure → The structure above the ^{foundation} ground level is known as superstructure.

wall, column, door, window, ventilator, lintel, Chajja

Roof → It is the upper most part of the structure shielding the building from sun, rain, wind & storm.

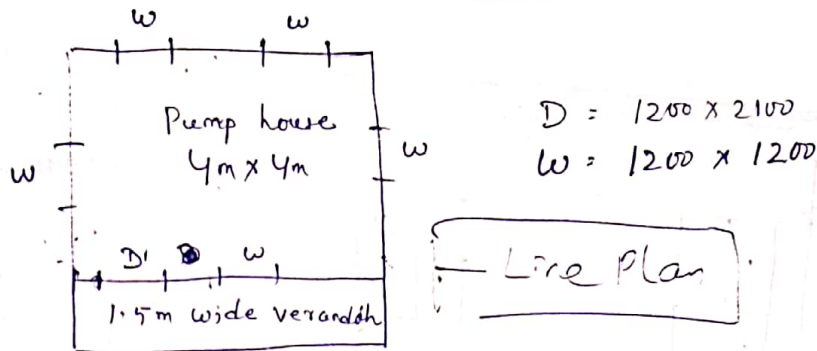
20/10/14

1. Masonry → The term masonry refers to the construction using either bricks or stones with cement, lime or mud mortar. The cement mortar being the mostly used one now a days.
2. Cement Mortar (CM) → It is a substance produced from prescribed proportions of cement, sand and water which gradually sets, hard after mixing.
3. Plain Cement Concrete (P.C.C) → A plain cement concrete is the concrete without any reinforcement. It is usually referred as cement concrete. $\frac{1:2:4}{\text{Cement, Sand, Jelly}}$
4. Reinforced Cement Concrete (R.C.C) It is the concrete reinforced by mild steel twist bars.
Found too,
5. Plinth → It is the portion of the structure between ground level & the floor level.
7. Damp Proof Course (D.P.C) → It is a continuous layer of impervious material provided at the plinth level beneath the wall to check dampness in the walls & to prevent moisture from getting.
8. Ceiling → The lower level of the roof slab exposed to the room is known as ceiling.

Q1. From the given line plan of a pump house, draw the following views adopting a suitable scale & specifications mentioned below.

(a) Plan at window sill level $\sqrt{15}$

(b) Front elevation $\sqrt{10}$



- specifications
- (i) Wall thickness - 300 mm ✓
 - (ii) Plinth height - 600 mm ✓
 - (iii) Ceiling height - 3500 mm
 - (iv) Roof thickness - 120 mm
 - (v) Sill height - 900 mm
 - (vi) Provide steps & pillars.
 - (vii) Assume other data if necessary.

- (1) Plan (Top view) At window sill level
- (2) Front view / Front elevation
- (3) Section at particular plane

Assumed data - Step -

$$\text{Rise} = \frac{150}{230} \text{ to } \frac{200}{300}$$

Pillar = 300 x 300 mm x mm

Plinth projection = 50

Door = 1200 x 2100

Window = 750 x 1000

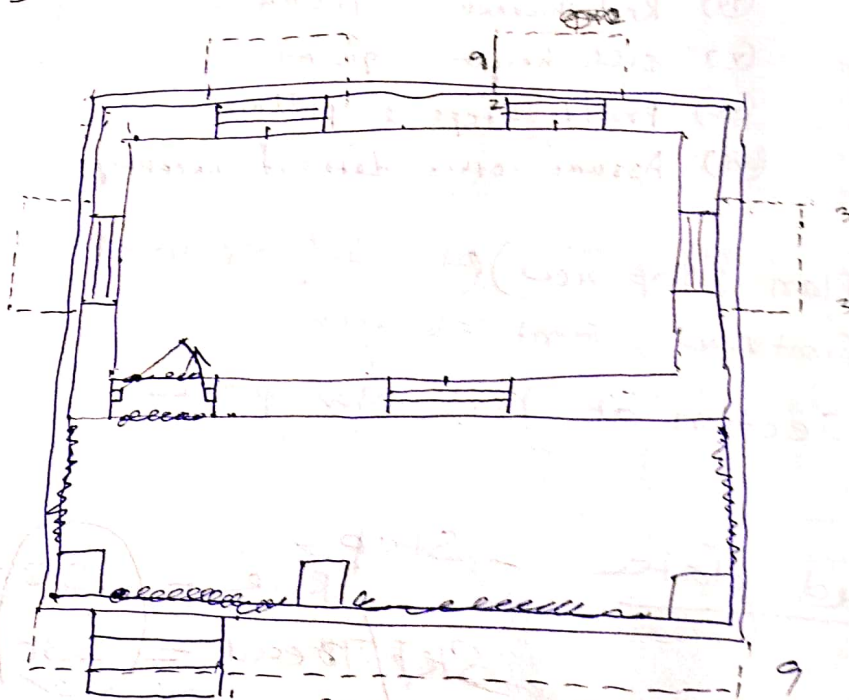
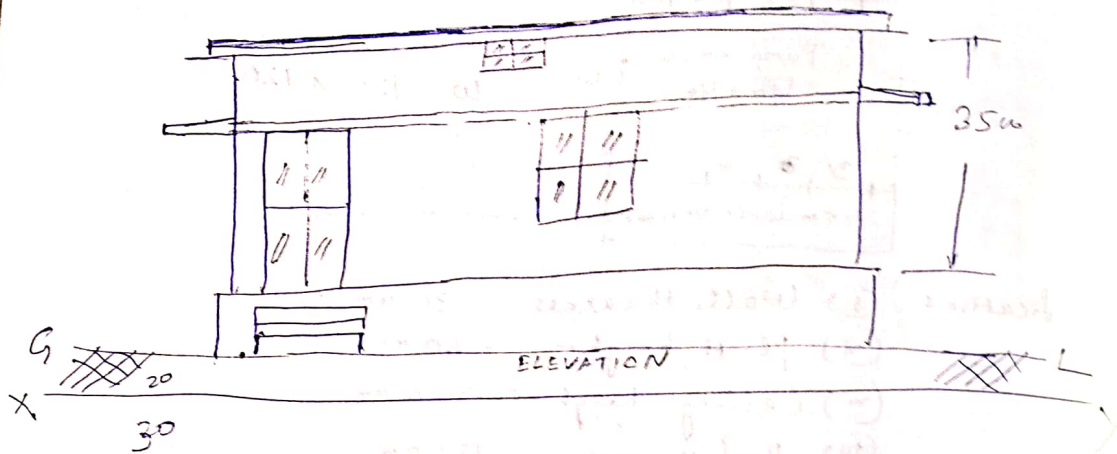
Chaffiz Projection = 450

Slab thickness = 100

$$\frac{150}{50} = 3.0$$

$$\frac{230}{50} = 4.6$$

Scale = 1:50



PLAN AT WINDOW SILL LEVEL

4000
1500
300
300
50
50

6200
50

2100
50

1000
50

Q2. A single room building have the following data

(a) size of the room - 5 m x 4 m

(b) Front Verandah - 2 m wide

(c) Door size - 1.2 m x 2.1 m

(d) Window size - 1.0 m x ~~2.1 m~~ 1.5 m

(e) Ceiling height - 3.5 m

(f) Plinth height - ~~0.6 m~~ 0.6 m

(g) Chajja projection - 0.45 m

(h) Plinth projection - 0.05 m

(i) Wall thickness - 0.3 m

(j) Rise - 0.15 m & Tread - 0.3 m

(k) Roof slab thickness - 0.12 m

(l) Roof slab projection - 0.10 m

(m) Lime Terracing - 0.08 m

(n) Pillar size - 0.3 m x 0.3 m

Draw to a suitable scale for the following views

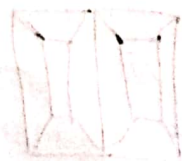
(i) Plan at window sill level

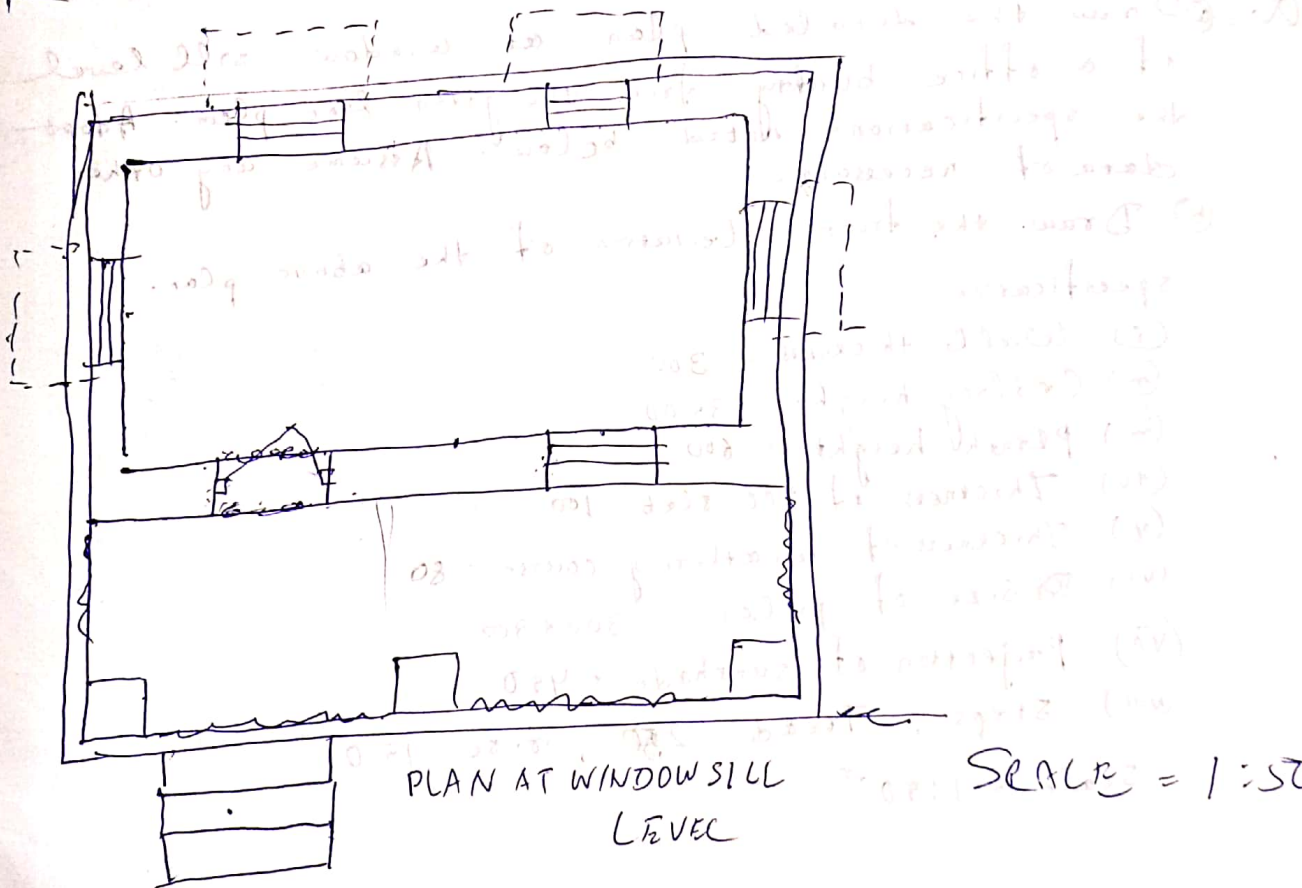
(ii) Front elevation.

(Assume any other data if necessary)

Given Data

Assumed Data

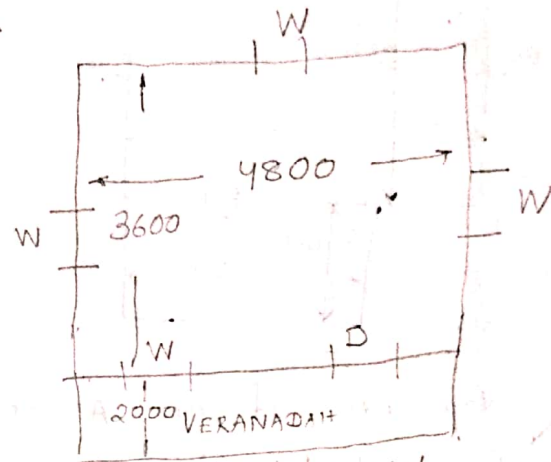




Q. 7)

2005
4

Ans



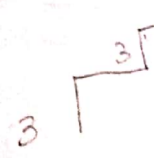
W
W
W
W
Door = 1
Window

LINE PLAN
NOT TO SCALE

SLNO	BUILDING UNIT	SPECIFICATION	
01	ROOM SIZE	4800 X 3600	
02	PLINTH HEIGHT	600	
03	SIZE OF DOOR	1200 X 2100	
04	SIZE OF WINDOW	1200 X 1500	
05	STEPS I-RISE	150	3 mm
06	FREAD	250	5 mm
07	RCC SLAB (ROOF)	120	2.4 mm ✓
08	P. HEIGHT	600	12 mm
09	WALL THICKNESS	300	6 mm
10	CHAJJA PROJE	600	12 mm ✓
11	CEILING HEIGHT	3000	2400 6 mm
ASSUMED DATA			
12	PLINTH PROJE	50	1 mm
13	PILLAR	300 X 300	(6 X 6) mm
14	RCC DL	80	1.6 mm ✓

SCALE = 1:50

Weathering Course = 80



(Short Questions)

1. ~~Conventional~~ Draw symbols for

- (i) Sand
- (ii) RCC
- (iii) Plywood
- (iv) Glass.

2. First angle projection method (Draw symbol)

3. Draw symbol for 3rd angle projection.

4. What is isometric projection.

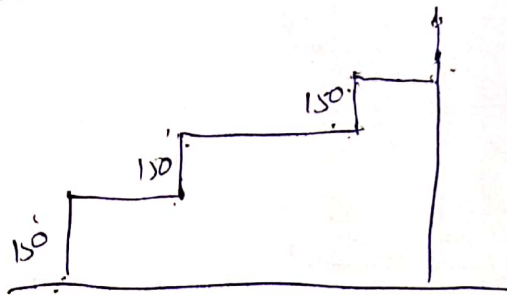
5. What is the 'e' value for parabola, hyperbola & ellipse.

6. What is R.F?

7. A point situated 30 mm above HP & 20 mm in front of VP draw its projection.

8. Draw conventional lines, or section line, or short break & cutting plane line.

9. If plinth height is 600 mm, rise 150 mm how many no. of treads are there. Ans 3



$$\text{Plinth height} \div \text{Rise} = (n - 1) = \dots$$

10. What are the drawing board size as per sp-40

11. What are the drawing sheet size as per BIS

12. Write down commands for ellipse with center (150, 60) axis & point (200, 60) minor axis, & endpoint (150, 80).