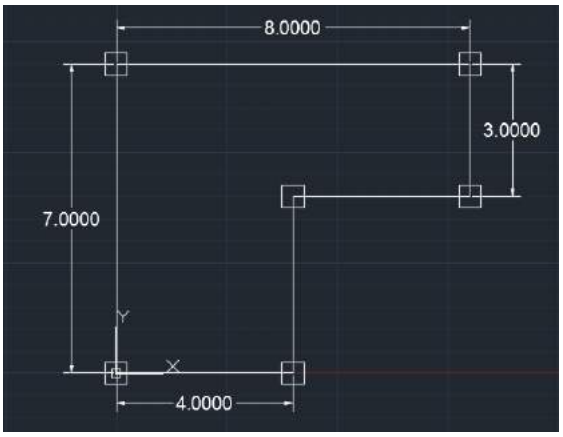
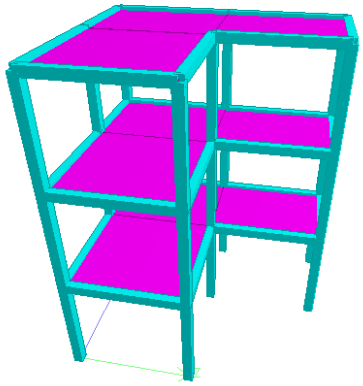
Assignment 1

A residential building located at Guwahati has the floor plan as given below:



(a) Plan



(b) 3-D View

Figure 1. Geometry of the building

1. Floor height: 3.5 m
2. Beam Size: 250 mm X 300 mm
3. Column Size: 300 mm X 300 mm
4. Slab Thickness: 100 mm
5. Grade of Concrete: M25
6. Grade of Steel: Fe415
7. Longitudinal bar diameter: 16 mm
8. Transverse bar diameter: 8 mm
9. Live loads are 2 kN/m^2 and 1 kN/m^2 at floors and roof resp.
10. Assume suitable data if not given

A 200 mm thick brick wall is provided only in the periphery of the building. Assume 20% reduction due to openings.

Find the followings:

1. Reaction force due of combined loads (DL +LL)
2. Natural frequency of the building
3. Reinforcement details of column, beam and slab in tabular form
4. Total volume of concrete and weight of steel