

*Any missing data may be reasonably assumed*

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Answer the following questions

**Question (1)**

The plan shown in Fig (1), is for a storage building. The expected live load on slab is  $0.30 \text{ t/m}^2$  and a covering material of  $0.10 \text{ t/m}^2$ . All beams have the same width of 25 cm and brick walls are allowed on the outer perimeter only. Columns are assumed square sections. Based on the above, find the following.

- A) Calculate the distributed loads for both shear and moment for beams B.
- B) Draw the shearing force and bending moment diagrams for beams B.
- C) Only sketch details of the reinforcement for beam B cross section . (25 %)

**Question (2)**

A class room measures  $12.0 \text{ m} \times 15.0 \text{ m}$  and the floor was suggested to be Panded Beams system. Projected beams are allowed.

- A) With a suitable scale draw a plan showing the floor concrete dimensions and the arrangement of beams.
- B) Carry out a complete calculations showing the correct design B.M for the different beams. (25 %)

**Question (3)**

A factory hall measures  $24.0 \text{ m} \times 24.0 \text{ m}$  in plan with 4 equal pavs in both directions. The expected live load on floor is about  $0.35 \text{ t/m}^2$ . The floor is suggested to be flat slab system. Only sketch the slab concrete dimensions and the details of reinforcements in plan and cross sectional elevation. (25 %)

**Question (4)**

Figure (2) shows a plan for an ordinary building. The floor is suggested to be hollow block slab system. Only sketch the slab concrete dimensions and the details of reinforcements in plan and cross sectional elevation for different sections. (25 %)

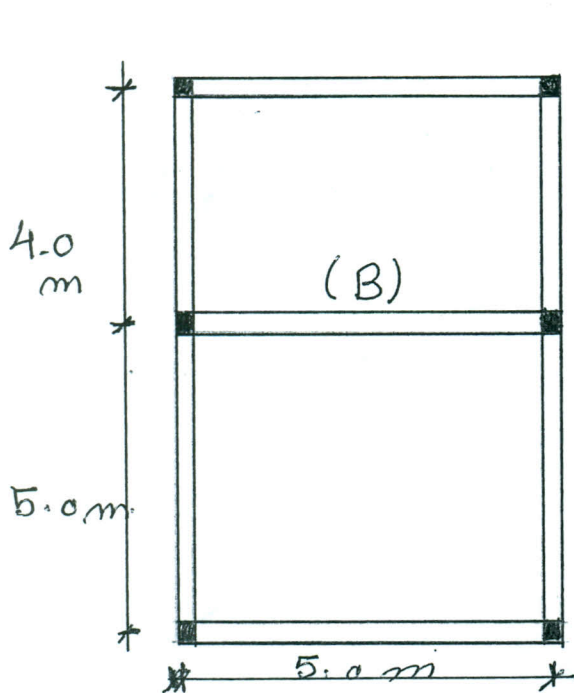


Fig (1)

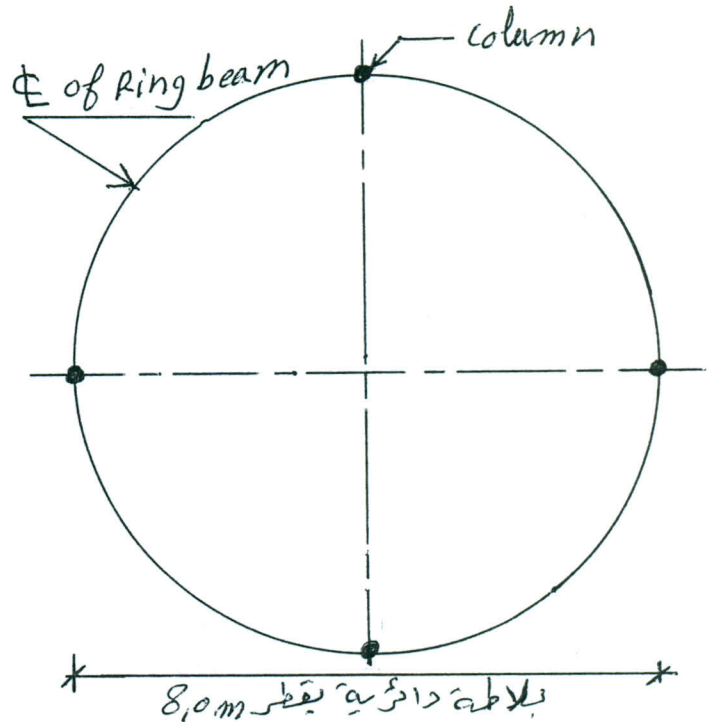


Fig (2)