



- Notes:
- Assume any missing data reasonably.
 - Only concrete tables and formula sheets are allowed.
 - This Exam satisfy ILOS of A4, A5, A6, B5, B11, C6 and D6.

Question No (1) (70%)

For the structural plan shown in **Figure (1)** and the following data

- All beams dimension (250*600mm).
- Wall load = 12 KN/m and F.C = 1.5 KN/m².
- Live load = 2.50 KN/m² and Thickness of all slabs = 120 mm.
- $F_{cu} = 25 \text{ N/mm}^2$ and $F_y = 360 \text{ N/mm}^2$.

It is required to:

- Draw the load distribution of slabs on plan. (10%)
- Calculate the ultimate total loads on beam **B1**. (20%)
- Make a full design for the beam **B1** and draw reinforcement details longitudinal and cross section with a suitable scale. (20%)
- Carry out a complete design of strip (1). (20%)

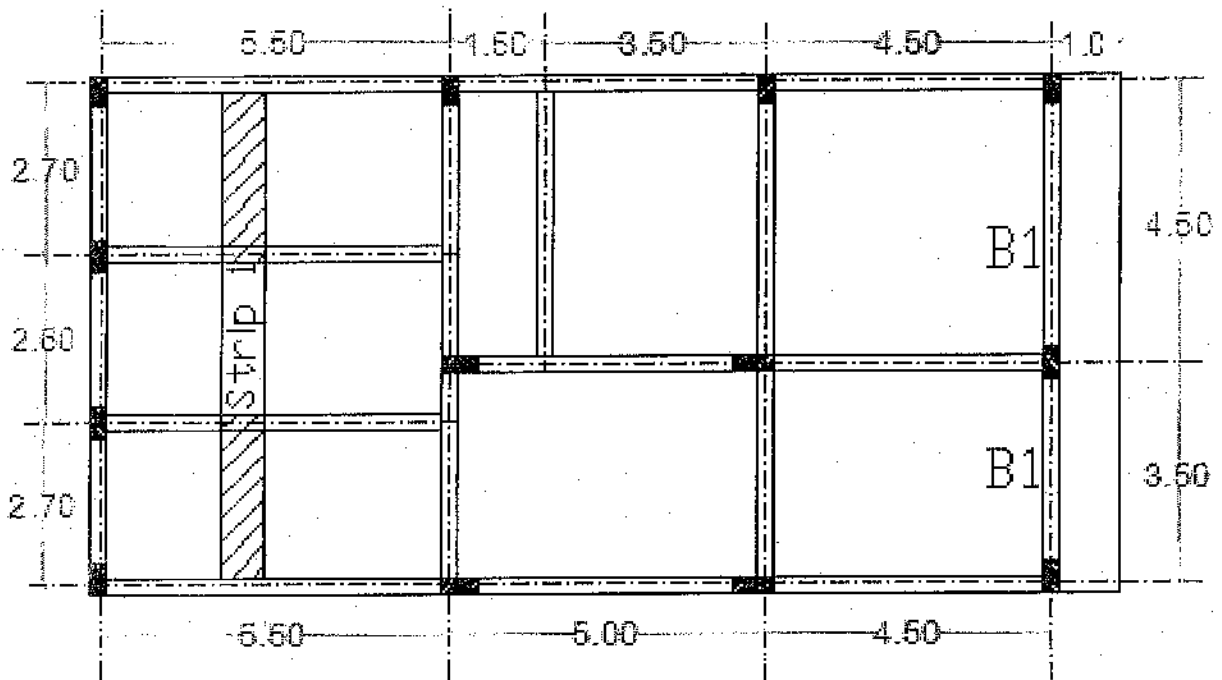


Figure 1

Question No (2) (30%)

a- Without any calculation draw reinforcement details with a suitable scale for slab shown in Figure 2. **(15%)**

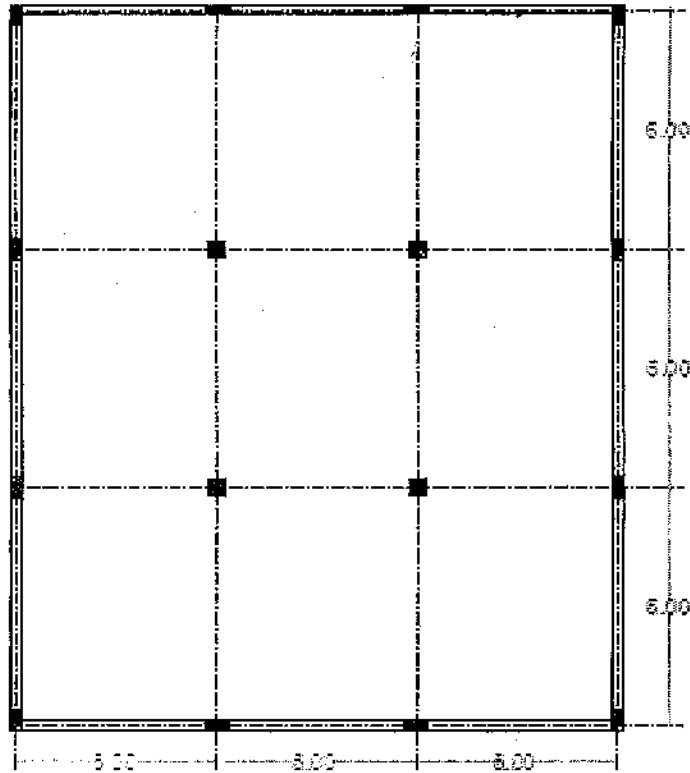


Figure 2

b- Design the short column which subject to total concentrated load ($P_{ult} = 3000 \text{ KN}$) as **rectangular section** then draw reinforcement details to the cross section of column with a suitable scale knowing that $F_{cu}=25\text{N/mm}^2$ and $F_y=360 \text{ N/mm}^2$. **(15%)**

Best Wishes: Dr. Fathi Abd Elazeem