



Total Mark: 30 Marks

Closed Book Exam

The Exam consists of one page

- *Systematic arrangement of calculations and clear neat sketches are essential.
- *Complete detail drawings of concrete dimensions and steel reinforcement are essential.
- *(Any missing data should be reasonably assumed according to Egyptian Code of Practice.
- * For all of the following problems: $f_{cu} = 25 \text{ MPa}$, $f_y = 360 \text{ MPa}$.

QUESTION 1:

(30 Marks)

The structural system of the building shown in Figure below is subjected to:

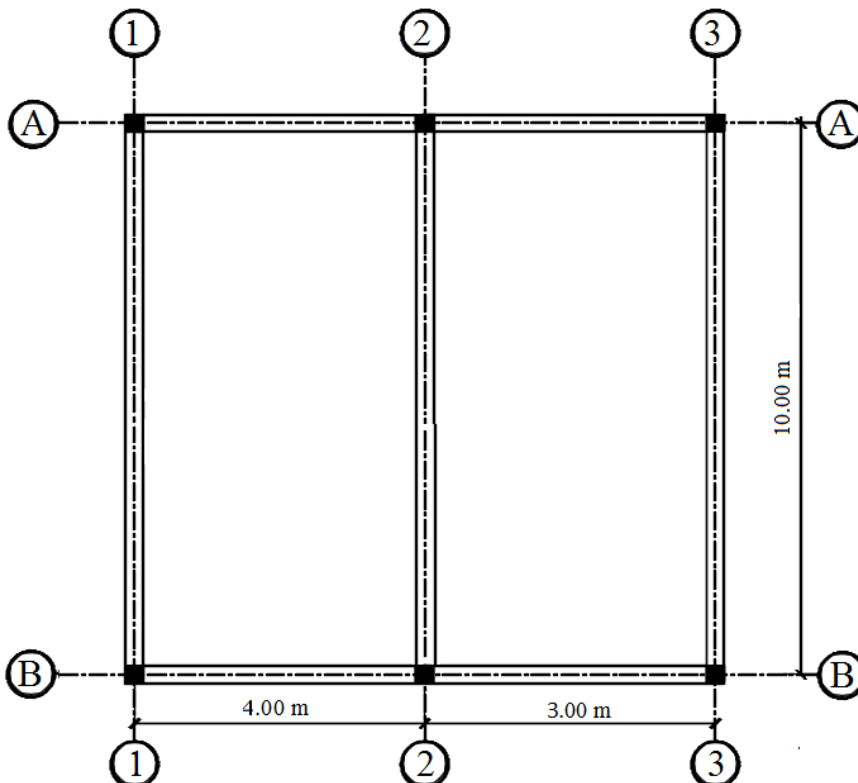
- * Live load on the slabs = 2.0 KN/m^2
- * Flooring Cover = 1.5 KN/m^2

It is required to:

- a) Design all slabs for thickness and steel reinforcement. **(15 Marks)**
- b) Draw to a reasonable scale a plan showing reinforcement details and thickness of slabs. **(15 Marks)**

$$\mu = \frac{0.67 * f_{cu}}{\gamma_c} * \frac{\gamma_s}{f_y} * \left(1 - \sqrt{1 - \frac{(3 * R_u * \gamma_c)}{f_{cu}}} \right)$$

| | μ_{max} | |
|-------------|------------------------------|------------------------------|
| Steel | 360/520 | 400/600 |
| μ_{max} | $5.00 \times 10^{-4} f_{cu}$ | $4.31 \times 10^{-4} f_{cu}$ |



Best Wishes

Dr. Taha Ibrahim