Kafrelsheikh University
Faculty of Engineering
Architectural Eng. Dep.
3rd Year , 1st Term Exam.

Structural Engineering (2)
a- Reinforced Concrete
Date:24 -1-2016 , Final Exam
Time allowed :2Hours , 2 pages

Systematic arrangement of calculations and neat drawings are essential .
Any missing data should be reasonably assumed.
Concrete characteristic strength , f_{cu} = 25 N/mm^2.
Grade of reinforcing steel is 360/520 except for stirrups 240/350 N/mm^2.

يسمح باستخدام كتيب جداول ومنحنيات مساعدات التصميم

Question (1) : (80 %)

(1) – For Main beam (ABCD) in the Structural plan shown in Fig.(1)
It is Required to :

(a) – Calculate the Loads for both Shear and Moment for beam(ABCD)
(b) – Draw the Shearing Force and Bending Moment Diagram for this beam
(c) – Design the Critical Section for both Flexural and Shear for this beam
(d) – Draw the Detail of Reinforcement to scale 1 : 25 and the Critical Sections to scale 1: 10

Data given :

L.L = 4 KN/m^2 , Slab thickness = 120 mm
Flooring Cover = 1.5 KN/m^2
Width of Main beam (ABCD) = 300 mm
Own weight of Main beam(ABCD) = 4 KN/m
Own weight of other beams = 3 KN/m
Weight of walls = 3.0 KN/m^2, Height of walls = 3.5 m

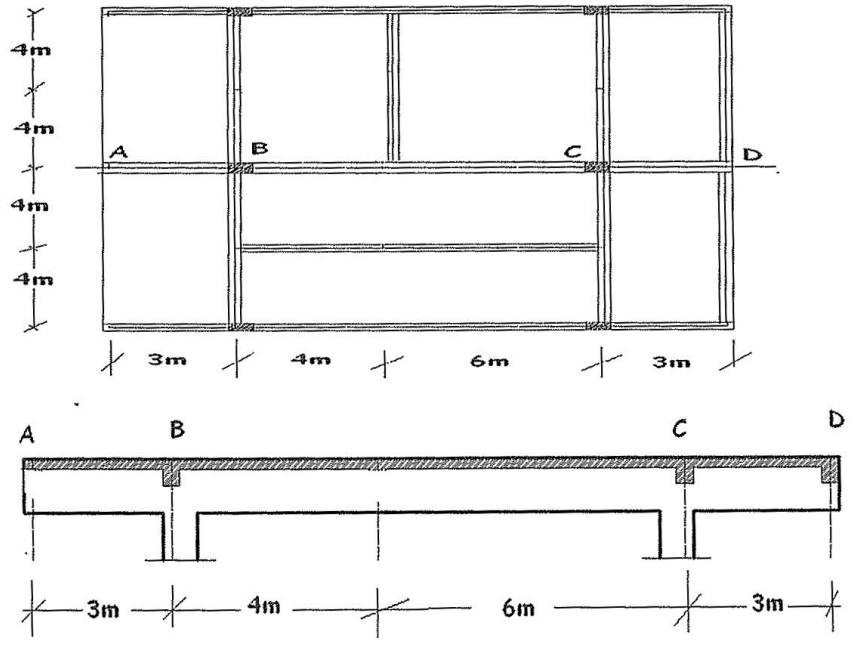

Fig.(1)

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Question (2) : (٢0 %)

Design a rectangular column subjected to centric ultimate vertical load equal to 2000 KN , and draw the details of the reinforcement to scale 1 : 10.

تم بحمد الله

GOOD LUCK

Dr. Ali M. A. Abouzaid