Kafrelsheikh University
Faculty of Engineering
Civil Engineering Department
3 rd Year, second Term Exam.

Reinforced Concrete Structures (2)
Date:25 - 5 -2016 , Final Exam:2 pages
Full Mark : 75 degree
Time allowed :4 Hours

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

يسمح بأستخدام كتيب جداول ومنحنيات مساعدات التصميم المسلمة في اللجنة او جداول ا.د/شاكر البحيري

Question (1) :   (40 %)

For the main frame shown in Fig.(1) , **all loads are working loads** , Slab
thickness = 140 mm , Breadth of the frame = 350 mm .

It is Required to :

1- Draw the ultimate internal forces diagrams for the frame (M_u , N_u , Q_u).
2- Design the critical section of the frame for both Flexural and Shear, also design
the hinged support .
3- Draw details of reinforcement for frame in elevation to scale 1 :50 and cross
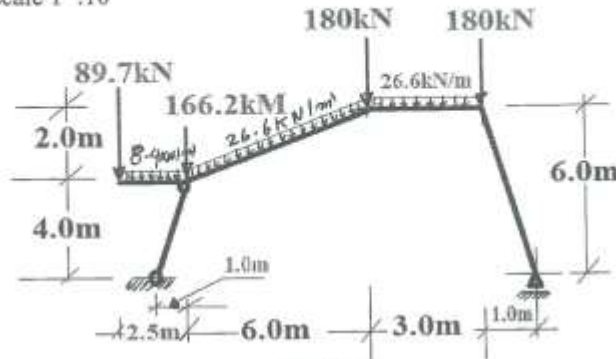section to scale 1 :10

Fig.(1)

Question (2) :   (20 %)

It is required to:-

Design and give full details for the main supporting element of a hall
which is to be covered by a reinforced concrete **arched slab system**
(curved slab(h=2m) , horizontal ties , horizontal beams , vertical beams
and columns) , if it is 12.0 ms wide , 40 ms long and 5 ms clear height ,
foundation level = -2m , Spacing between columns = 6m , L.L.= F.C. =
0.5KN/m H.P . . wind load of 1.0 kN/ m², t_s =120mm

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Question (3) :   (20 %)

It is required to Design a saw-tooth structural system and give full details for the factory shown in Fig (2), live load of 1.0 kN/m^2 and a covering materials of 1.4 kN/ m^2 , t_s =160 mm , wind load of 0.8 kN/ m^2 and 7.5 ms clear height .
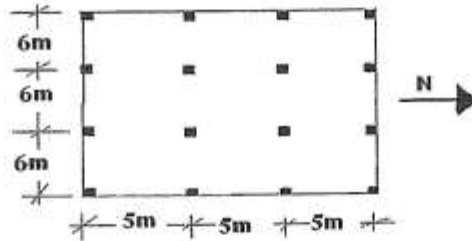

Fig.(2)

Question (4) :   (20 %)
It is required to:-

1- Draw   internal forces diagrams for the Main supporting element Vierendeel (M_u , N_u , Q_u).

2- Design the critical section for both Flexural and Shear.

3- Draw details of reinforcement in elevation to scale 1 :50 and cross section to scale 1 :10
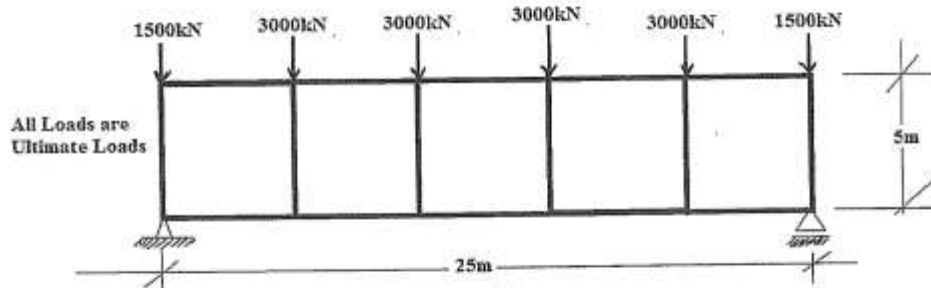

Fig.(3)

تم بحمد الله

GOOD LUCK   **Dr. Ali Mohamed Abdallah**