Kafr El-Sheikh University
Faculty of Engineering
Civil Engineering Department
Third Year Civil, 2nd term

Reinforced Concrete 2
Final Exam
Date: May, 23rd, 2017
Time: 4.00 Hours

Full mark: 75

- **Answer all the following question.** *For the all questions (f_{cu} = 35 N/mm^2 & f_y = 360 N/mm^2).*
- **Any missing date may be reasonably assumed.**
- **Using design aids is allowed.**

Question No. 1 (20%):-

a- ***Without calculations**, mention the **steps for only SHEAR deep beam design**, Min. steel ratio, and then sketch with drawing **(on your answer paper)** the R.F.T recommended by Egyptian code practice.*

b- ***Without any calculations**, it is required to **evaluate with sketch** the empirical dimensions for **a Tied-arch slab** covering an area of 40x60 m^2 shown in **Fig.1**. Then present the minimum reinforcement on a **half cross sectional elevation for a Tied-arch slab** with a scale of 1:50.*

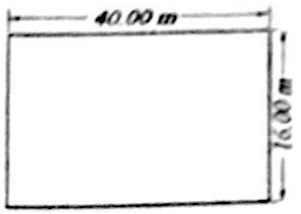


Fig. (1)

Question No. 2 (20%):-

*Provide a full design for the shown Vierendeel girder resisting the existing loads shown in **Fig. 2** followed by R.F.T of a **half cross-sectional elevations (only one panel)** with a scale of **1:50**.*

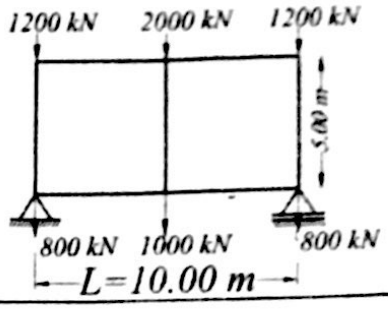


Fig. (2)

Question No. 3 (25%):-

*It is required to design the frame shown in **Fig.3** which is employed as a main supporting system for a stadium. Then, **draw R.F.T with a scale of 1:100** for sectional elevation and **1:25** for only **two critical section (-ve &+ve moment)**.*

Given data are:-L.L= 5.0 kN/m^2, F.C= 1.5 kN/m^2.

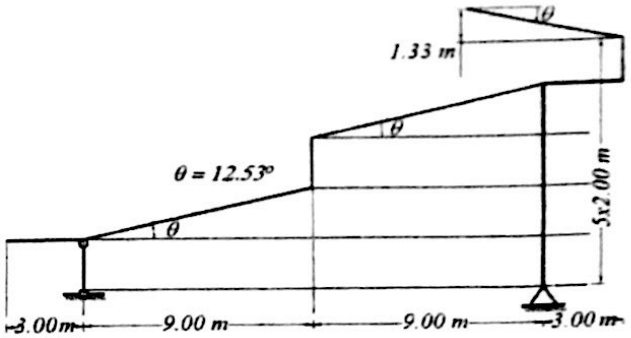


Fig. (3)

Question No. 4 (25%):-

*The plan shown in **Fig.4** is supposed to be covered by a **saw-tooth roof** structure supported by an **arch girder**, it is required to execute the follows :-*

- *Provide a full design for **the only saw-tooth structure** followed by R.F.T. (1:25 for cross sections & 1:100 for **one slab**)*
- ***Without calculations**, provide the empirical dimensions and draw the Min. R.F.T for the **arch girder (scale of 1:50 for only 2 panels)**.*

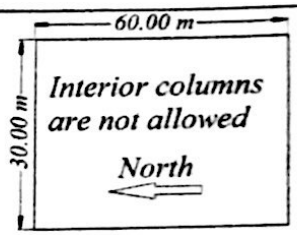
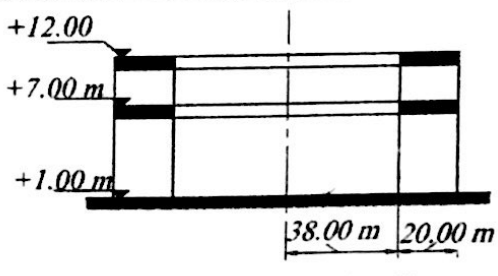


Fig. (4)

Question No. 5 (15%):-

*Sketch the **best statical system**, the **lay-out** with R.F.T (for one supporting element) of plan shown in **Fig.5**. Note:- Columns are allowed only in ☒ & the dashed line*



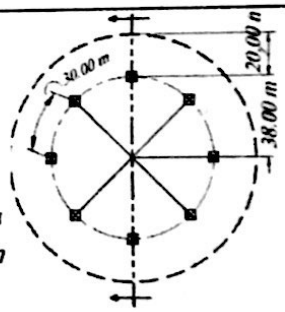


Fig. (5)

I wish you all the best
Dr. Ahmed Abd-ALLAH hamoda