BENHA UNIVERSITY
SHOUBRA FACULTY OF ENGINEERING
CIVIL ENGINEERING DEPARTEMENT
Third Year Civil (General)
Code: CVG323

مادة:تصميم منشآت خرسانية-ب

إمتحان الفصل الدراسي الثاني
ثالثة مدني عام

٢٠١٦-٢٠١٧

دكتور المادة
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ثالثه مدني عام

Benha University
Faculty of Engineering- Shoubra
Civil Engineering Department
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2nd Term Exam
Date: 24/05/ 2017
Reinforced Concrete Structures (2-B)
Duration : 3 hours

*** Design aids and Tables are allowed**

- Answer all the following questions
- Illustrate your answers with sketches when necessary.
- The Exam. consists of **two** pages
- No. of questions: 3
- Total Mark: **90 Marks**

(Note: f_y = 360 N/mm^2, f_y (stirrups) = 240 N/mm^2, f_{cu} = 30 N/mm^2).
(Any missing data should be reasonably assumed)

Question 1: (ILos a1,b1,c1,c2)

Figure 1 shows a typical section for an storage buidling. The roof slabs are subjected to a uniformly distributed live load of 2.0 kN/m^2 and floor cover load of 2.0 kN/m^2. The frame elements width is restricted to be 0.40 m. Spacing between frames equal to 6.0 m. It is required to:

a)- Choose a structural system for the roof slabs on the frames then make complete design for the slabs and beams. **(10 Marks)**
b)- Draw to reasonable scale the reinforcement of **roof slabs.** **(10 Marks)**
c)- Make a complete structural analysis of the **frame** and draw the **N.F.D, S.F.D** and **B.M.D;** (The horizontal reaction at support of each frame equal to **18%** of the ultimate vertica reaction at this support) **(10 Marks)**
d)- Design all the frame elements according the requirement of the Egyptian Code of Practice (ECP203-2007). Detailed calculations are **essential**. **(15 Marks)**
e)- Draw to a reasonable scale the concrete dimensions and complete reinforcement details of the frame (1:25) as well as the necessary cross section details(1:10). **(20 Marks)**
f)- Design the hinged connection (A) then draw the connection details **(5 Marks)**

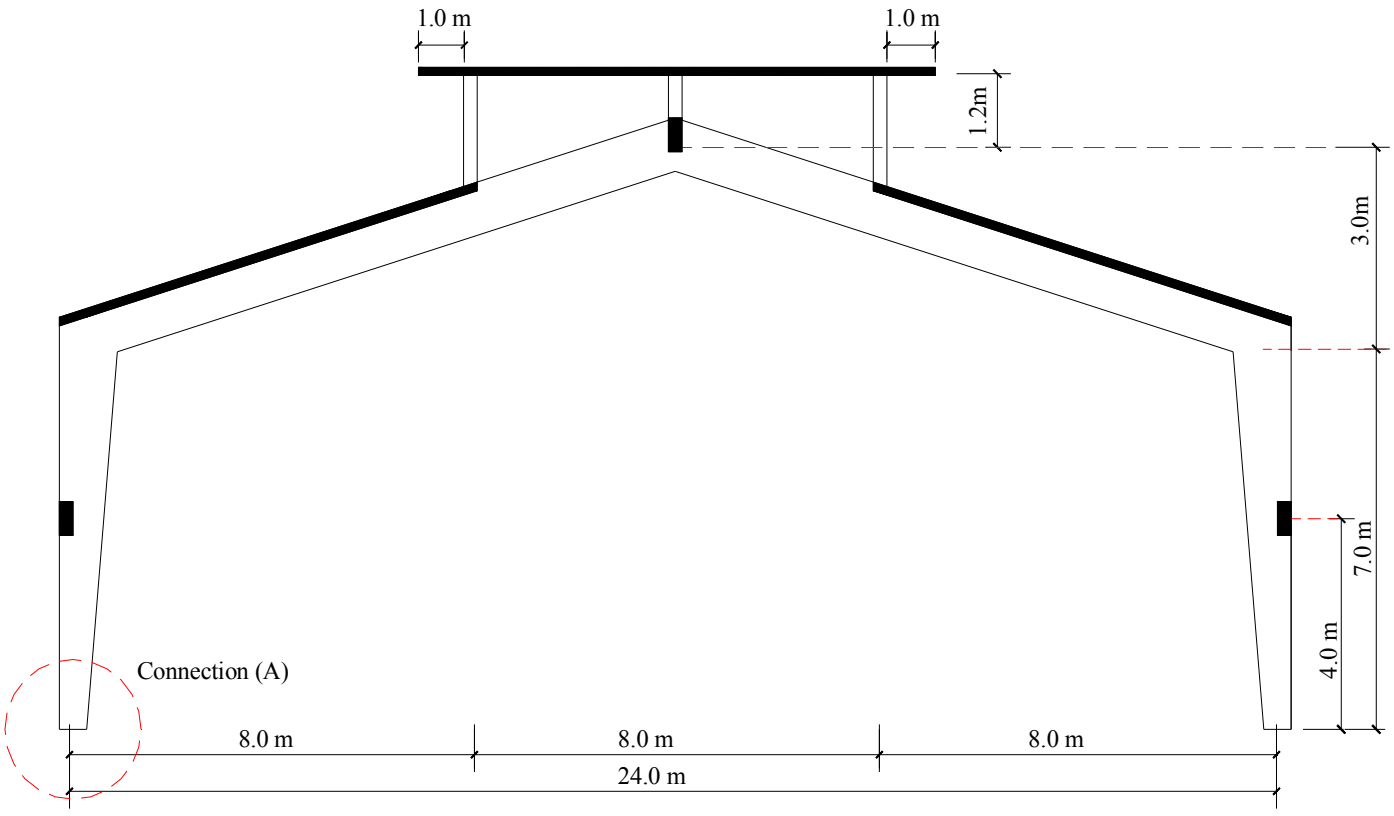

Figure 1

Question 2: (ILos a1,b1,c1,c2)

The arched slab with tie shown in Figure 2 is subjected to live load of 1.0 kN/m^2 and floor cover of 0.5 kN/m^2 . It is required to:

a) Make a complete analysis and Design for the arched slab only. **(5 Marks)**

b) Sketch to a reasonable scale concrete dimension & reinforcement details for all concrete elements. **(5 Marks)**

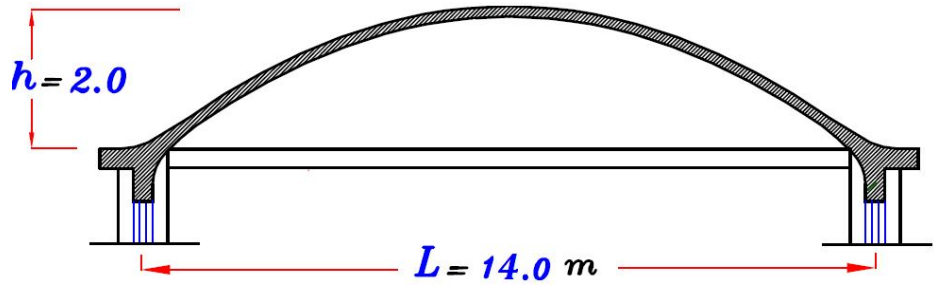

Figure 2

Question 3: (ILos a1,b1,c1,c2)

-Estimate the concrete dimension **only** for both systems shown in Figure (3) & Figure (4).

-From structural point of view, what the main advantages and disadvantages of each system? Then, list the kind of buildings that can be constructed using each system. **(10 Marks)**

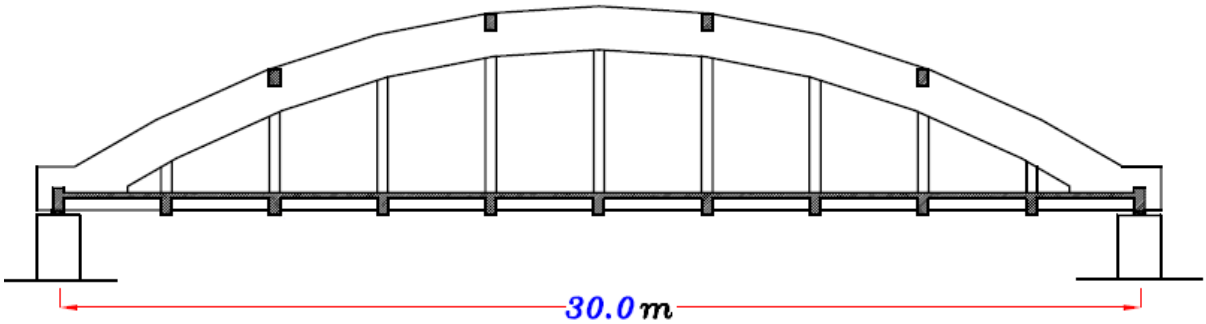

Figure 3

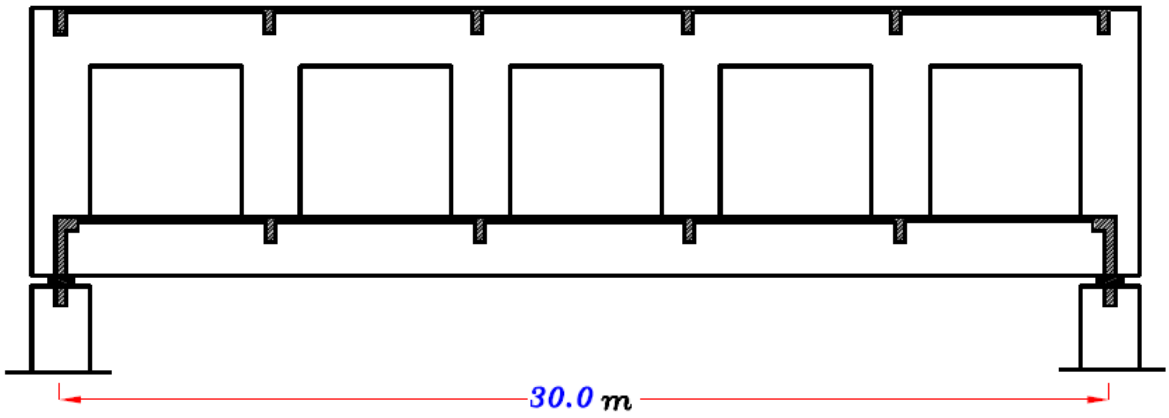

Figure 4

Best Wishes
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