Menoufia University Faculty of Engineering, Shebin El-Kom Civil Eng. Department Second Semester Examination, 2014-2015 Date of Exam: 23/ 5 / 2015	Subject: Reinforced Concrete Code: CVE 302 Year : 3rd Year Civil Time Allowed : 4 hours Total Marks : 120 marks

- Any data not given is to be assumed

Question 1 (60%) :

Figure (1) shows 8 symmetrical radial frames 'abcd' which are hinged at 'a'. The 8 frames carry a sky light of a circular slab on panelled beams system supported on 8 columns. The diameter of the sky light is 10 m with 1m cantilever slab and its height is 2 m as shown.

Assume the following data:

- Total working loads of slabs:

(D.L + L.L + Floor Cover) = 1.0 t / m^2

f_{cu}= 300 kg/cm^2. Steel 36/52.

It is required :

1- Complete design* of the circular sky light as panelled beams system. (15%)

2- Complete design* of the circular beam and the column at 'e' (5%)

3- Complete design of slabs 'dc' (5%)

4- Complete design of the typical radial frame 'abb'cd' (25%)

5 – Circular beam at 'd'. (5%)

6- Assume the footing dimensions at 'a' if the bearing capacity of the soil = 2 kg/cm^2. Calculate the eccentricity of the foundation to get uniform stress. (5%)

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* Complete Design = Design + Drawing.

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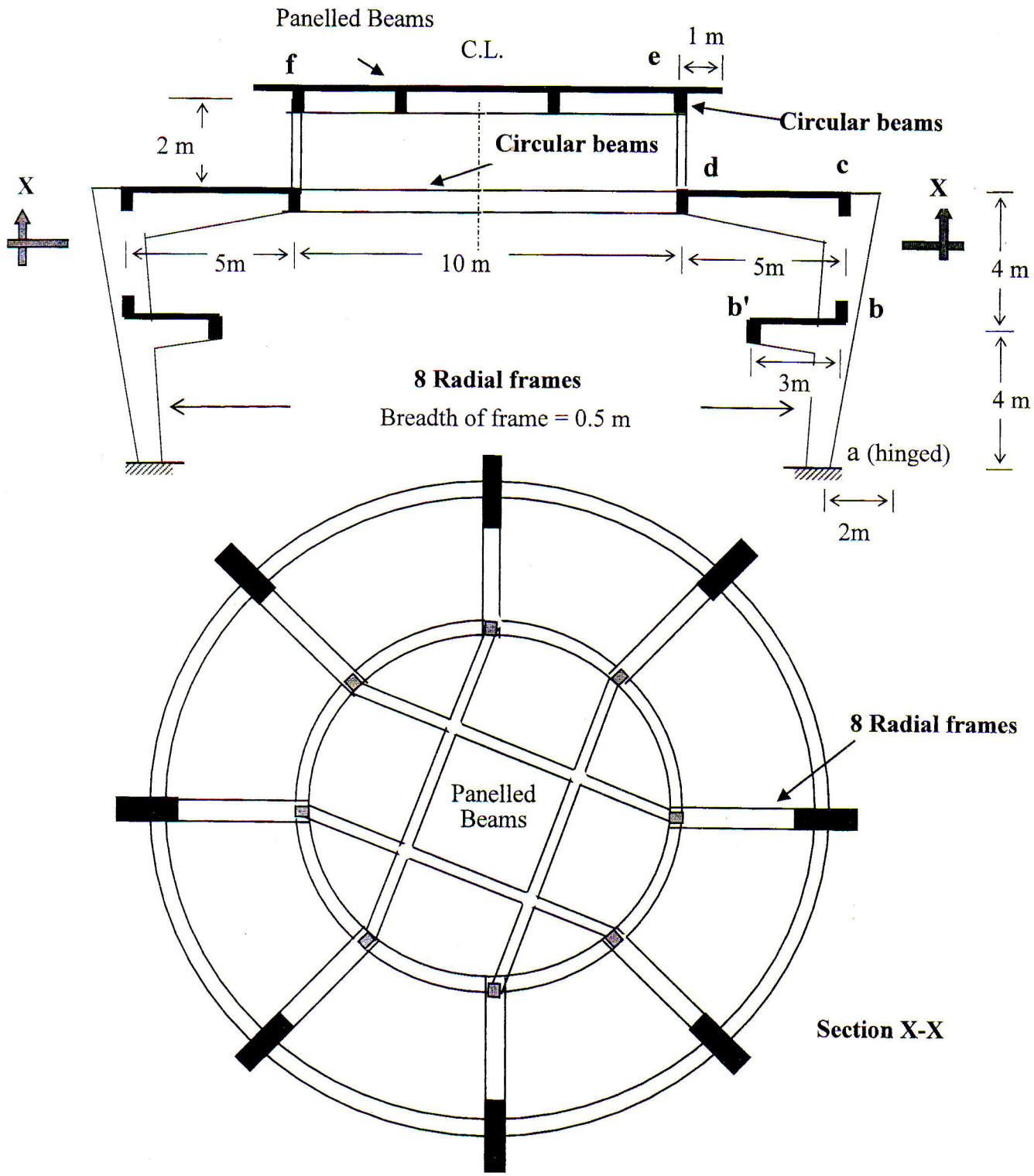
Panelled Beams
C.L.
f
e
1 m
Circular beams
Circular beams
2 m
d
c
X
X
5m
10 m
5m
4 m
b'
b
3m
4 m
8 Radial frames
Breadth of frame = 0.5 m
a (hinged)
2m
8 Radial frames
Panelled
Beams
Section X-X

Figure (1)