



Total Mark: 20 Marks

Duration: 1.5 hours

Mid Term Exam

Tuesday 15/04/2014

No. of questions: 1

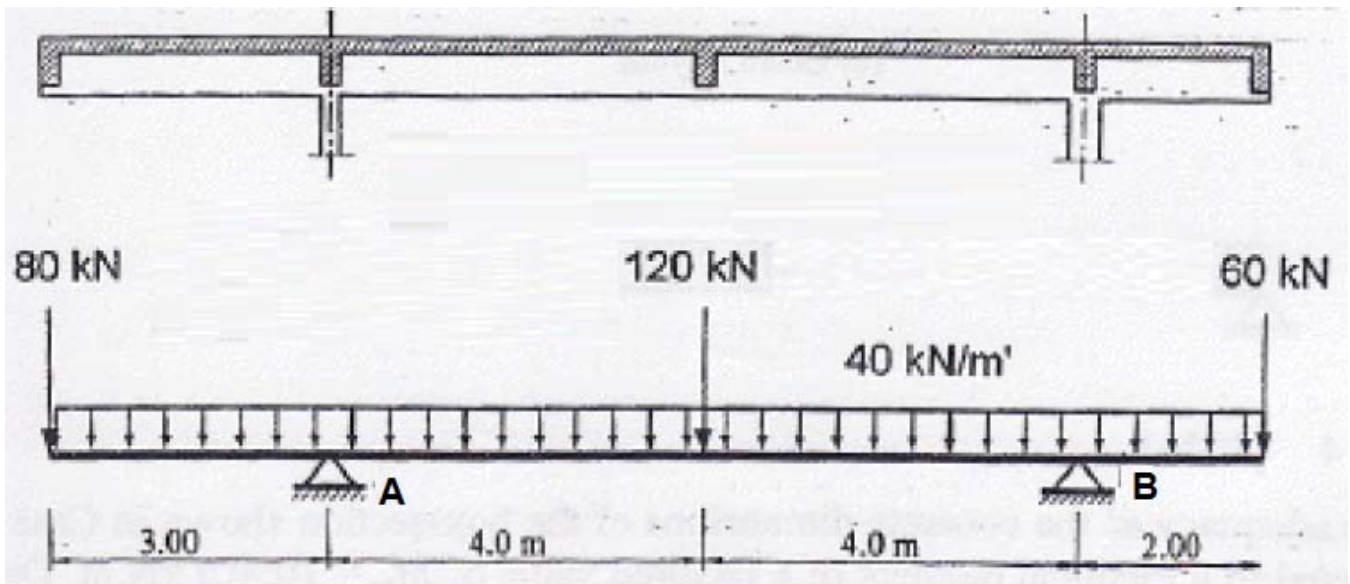
- \*Systematic arrangement of calculations and clear neat sketches are essential.
- \*Complete detail drawings of concrete dimensions and steel reinforcement are essential.
- \*Any missing data should be reasonably assumed according to Egyptian Code of Practice.

**QUESTION 1:**

(20 Marks)

The figure given below shows an interior simple beam with double cantilevers. The cube compressive strength of concrete  $f_{cu}=25$  Mpa and the yield stress of steel  $f_y=360$  Mpa. The width of the beam=250mm, the thickness of the beam=700mm. It is required to:

- a- Draw the bending moment diagram and the shear force diagram. (5 Marks)
- b- Design all the critical sections for bending and shear. (10 Marks)
- c- Design column (A) as circular section and column (B) as circular section. (8 Marks)
- d- Draw to a suitable scale a longitudinal section and cross-sections showing the arrangement of the longitudinal reinforcement. (7 Marks)



Best Wishes  
Dr. TAHA IBRAHIM