UNIVERSITY OF SOUTH AUSTRALIA
SCHOOL OF GEOINFORMATICS, PLANNING & BUILDING

PROGRAM: **Graduate Certificate in Building and Planning ICBP**

COURSE: BUILDING STRUCTURES 5 BUIL 5008 (02601)

EXAMINATION: **Semester 1, 2003**

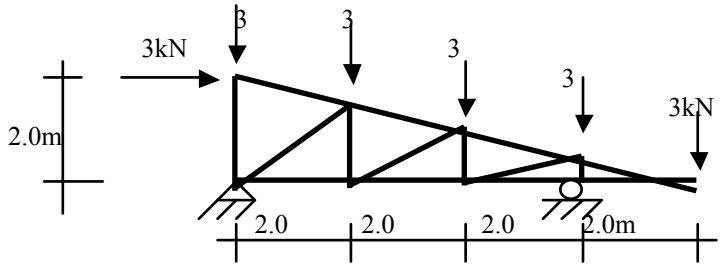
DURATION**:** **3 Hours of Exam time,**
preceded by 10 minutes of Reading time, a total of 3 Hrs 10 Mins.

EXAMINER: Stefan Hornlund

INSTRUCTIONS TO CANDIDATES:
- Attempt all questions
- All questions are of equal value
- Any references are allowed
- State any assumptions made

Note: Please excuse the inaccuracy of the drafting package.
Use the dimensions provided.

Question 1.
Calculate the forces in all members of this loaded, pin-connected, truss.

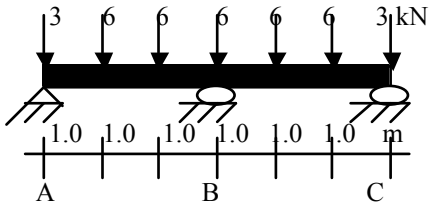


Questions continue on next page

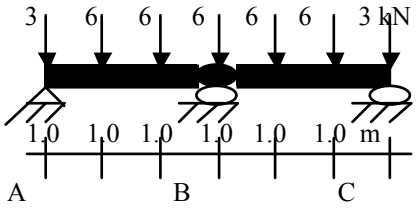
Question 2

The sketches below illustrate two alternative structural solutions. In a) the beam is continuous over the three support points, A, B and C, whilst in b) there are two separate beams A-B and B-C. You are asked to determine the required depth of each beam if the beam width is to be 70 mm, based on bending stress only. Use Fb = 11 MPa.

a)



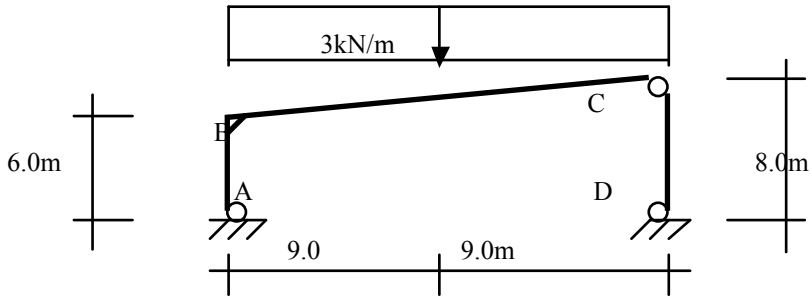
b)



Question 3

a) Calculate and draw the bending moment diagram for this loaded 3-pin frame (pin-connections at A,
C and D), including all maximum values, any points of contra-flexure etc.

b) If the frame was modified by replacing the pin connection at C with a rigid connection, and thereby transforming the frame to a statically indeterminate 2-pin frame, how would that affect the bending moment diagram? Sketch the new BMD and highlight the differences. No calculations are required.



END OF QUESTIONS