

National Exams December 2009

04-BS-15, Engineering Graphics & Design Process

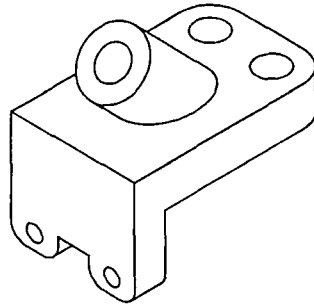
3 hours duration

Notes

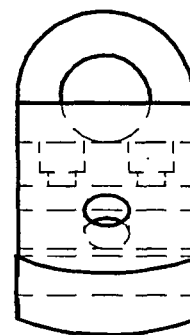
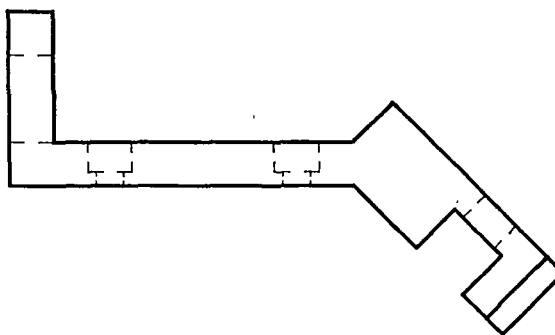
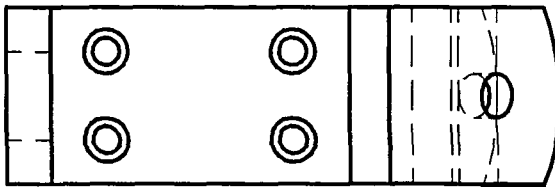
1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.
2. This is a closed book examination. Candidates may use one of two calculators, the Casio or Sharp approved models.
3. Aids allowed:
 - a. Straight edge
 - b. Engineering squares or rolling ruler
 - c. Pencil and eraser
 - d. Engineering scale
 - e. Protractor
 - f. Compass
4. Ten (10) questions constitute a complete exam paper. Clearly label the answers in the answer book.
5. The total of marks is 100.
6. Failure to follow the above directions will result in the grade penalties.

Examination Questions

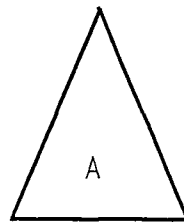
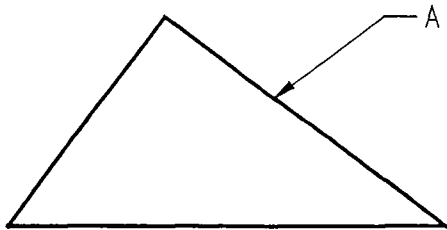
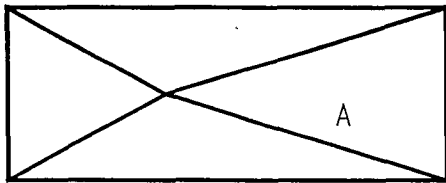
1. Shown below are the isometric pictorial of a simple steel component. Sketch or draw an orthographic projection of the component. Select and position principal, section, and auxiliary views as necessary. Use common Canadian (CSA/ANSI) conventions and practises. Do not dimension. All holes are through. (10 marks)



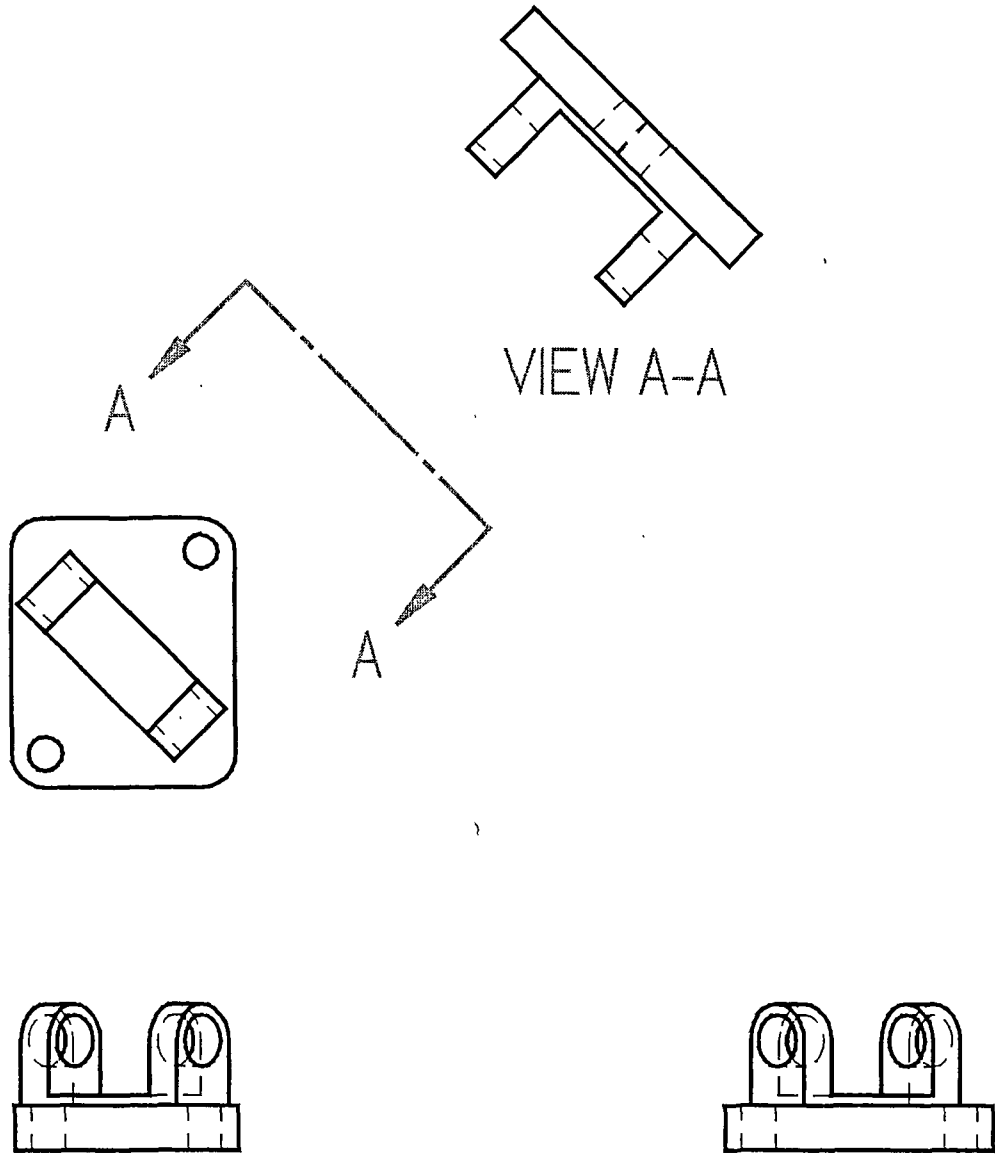
2. Sketch an isometric pictorial of the following orthographic projection. Sketch; do not draw. Do not use a straight edge. (10 marks)



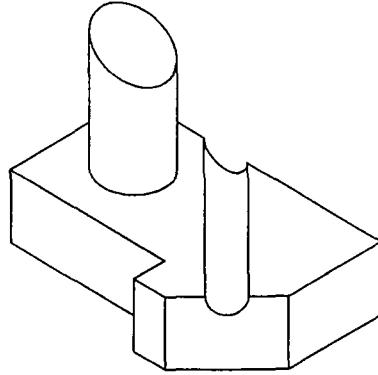
3. Draw face A of the following component in true shape. Show all work. Clearly label auxiliary views. Complete the answer in the space provided below. (10 marks)



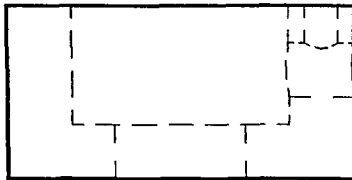
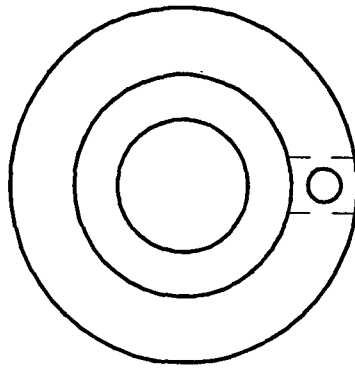
- 4. Dimension the following orthogonal projection using Canadian conventions (CSA/ANSI) in millimetres. The component is drawn in one-eighth scale. Complete the answer on the drawing provided. (10 marks)



5. Sketch the steps that could be used to construct the following object using primitives (i.e., block, sphere, cylinder, etc.) using only Boolean operations (union, intersect, subtract). (10 marks)



6. Sketch an appropriate section view for the following object. (10 marks)



7. Define two of the three following terms. (5 marks each; 10 marks total)
- Working drawing
 - Title block
 - Engineering change order
8. Draw a function diagram of a bicycle. Clearly label inputs, outputs and sub-functions from the perspective of energy and matter flow. (10 marks)

9. Define two of the three following terms. (5 marks each; 10 marks total)
 - a. Concurrent engineering
 - b. PDM
 - c. Ideation
10. Describe DFM and give an example. (10 marks)