National Exams December 2016

04-BS-15, Engineering Graphics and Design Process

3-Hours Duration

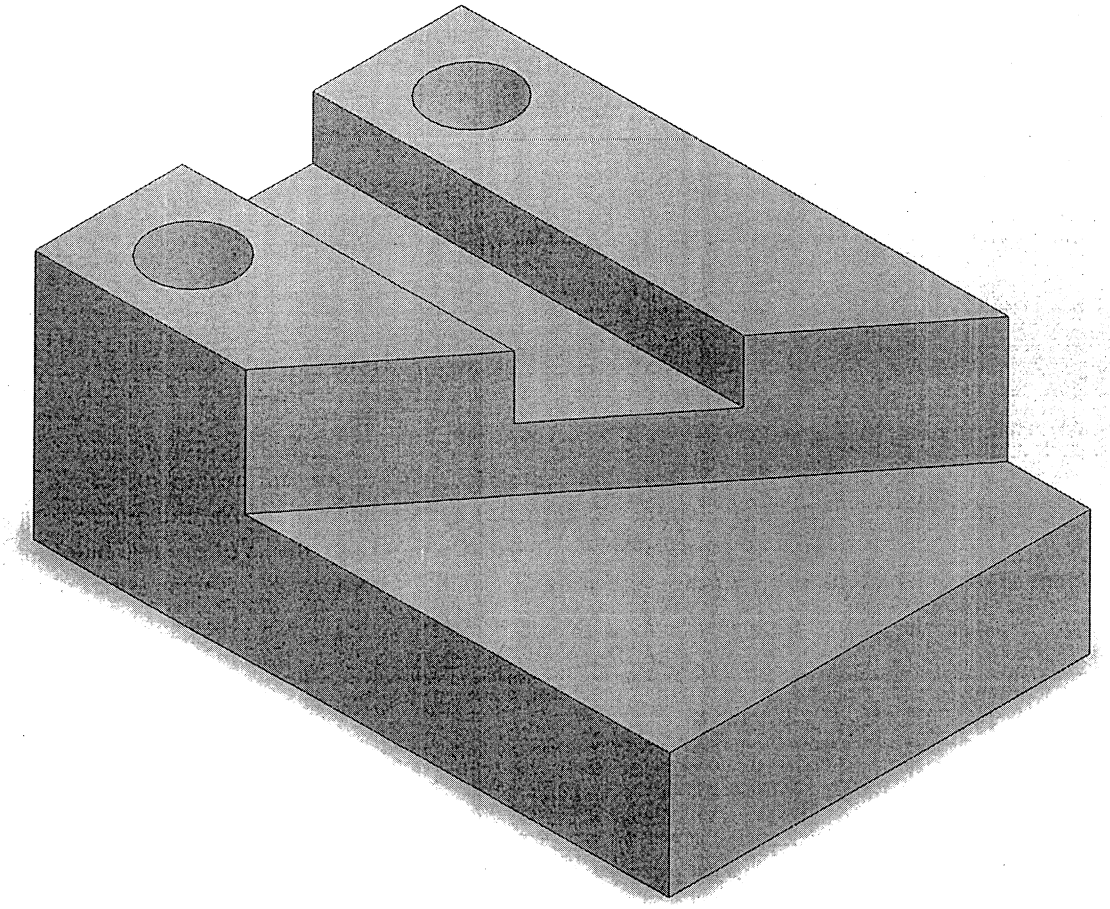
NOTES

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. No calculator is permitted.
3. Three (3) multi-part questions constitute a complete exam paper. Clearly label the answers in the answer book.
4. All sketches must be made freehand and must be easy to read and neat. Straightedges may not be used.

QUESTION 1

For the part shown below,

a) Sketch an appropriate set of orthographic views, using third-angle projection. (10 marks)
b) Sketch an appropriate section view. (10 marks)
c) Describe and sketch two different sequences of feature-based solid modelling operations that could be used to create this geometry using CAD software. (10 marks)
d) Describe and discuss appropriate manufacturing methods for this part, and any issues that might arise. (10 marks)

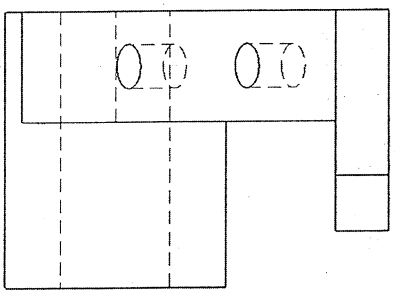


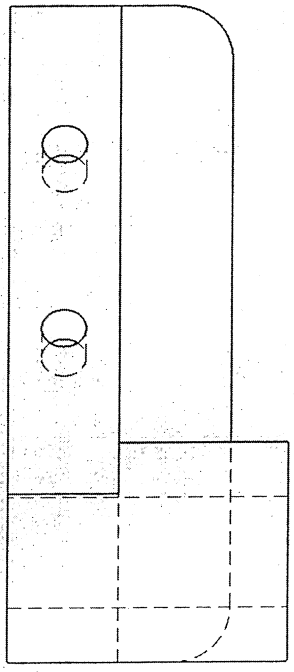
QUESTION 2

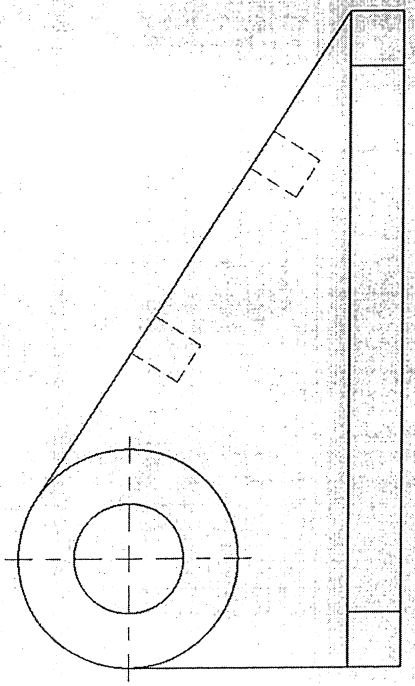
For the multiview drawing on the next page,

a) Sketch an appropriate auxiliary view. (10 marks)
b) Sketch an isometric view. (10 marks)
c) Fully dimension the drawing using professional standards. Use "xx" in place of numerical values in the dimensions. (10 marks)

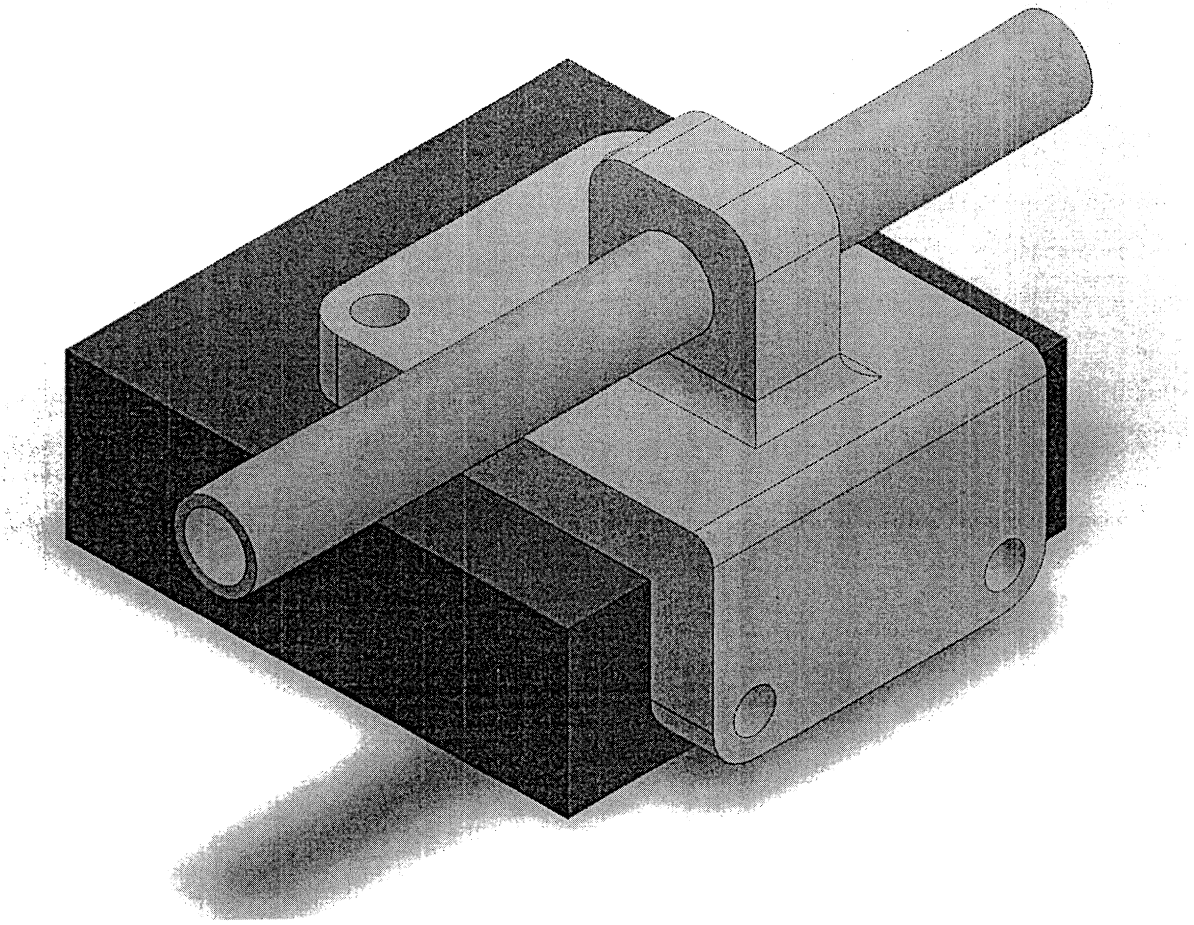
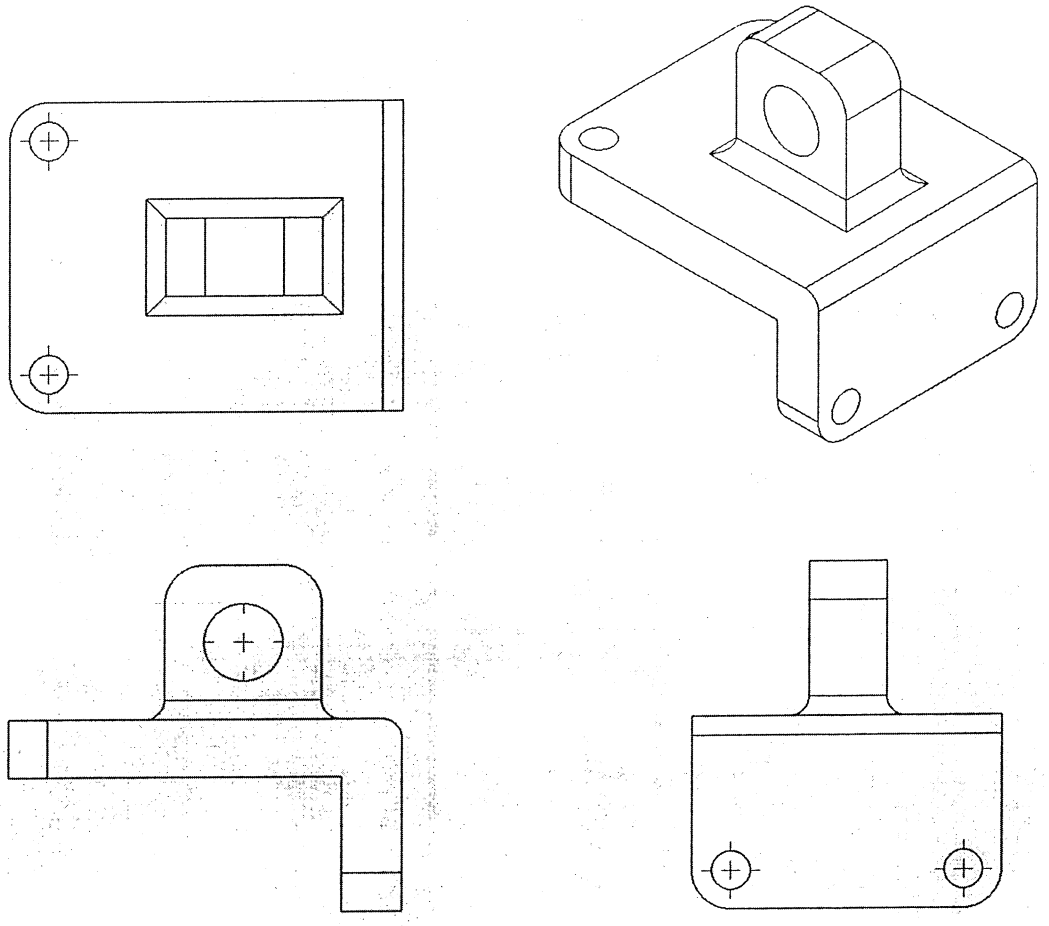
You may either re-sketch the required drawing views in the exam booklet, or add sketches and dimensions to the views on the next page of this exam paper. The drawing on the next page is in landscape orientation, with the bottom of the drawing aligned with the right-hand side of the page.







QUESTION 3

The figure below shows a shoulder bracket that mounts onto a baseplate, and positions a shaft accurately relative to the baseplate. The bracket is fastened to the baseplate by four bolts. Fillets and chamfers are omitted for simplicity.

a) Identify and prioritize the functions of the geometric features of this shoulder bracket. (10 marks)
b) Identify appropriate datum features for this bracket. (10 marks)
c) Identify appropriate GD&T controls to apply to the bracket. (10 marks)