

National Exams December 2017

04-BS-15, Engineering Graphics and Design Process

3-Hours Duration

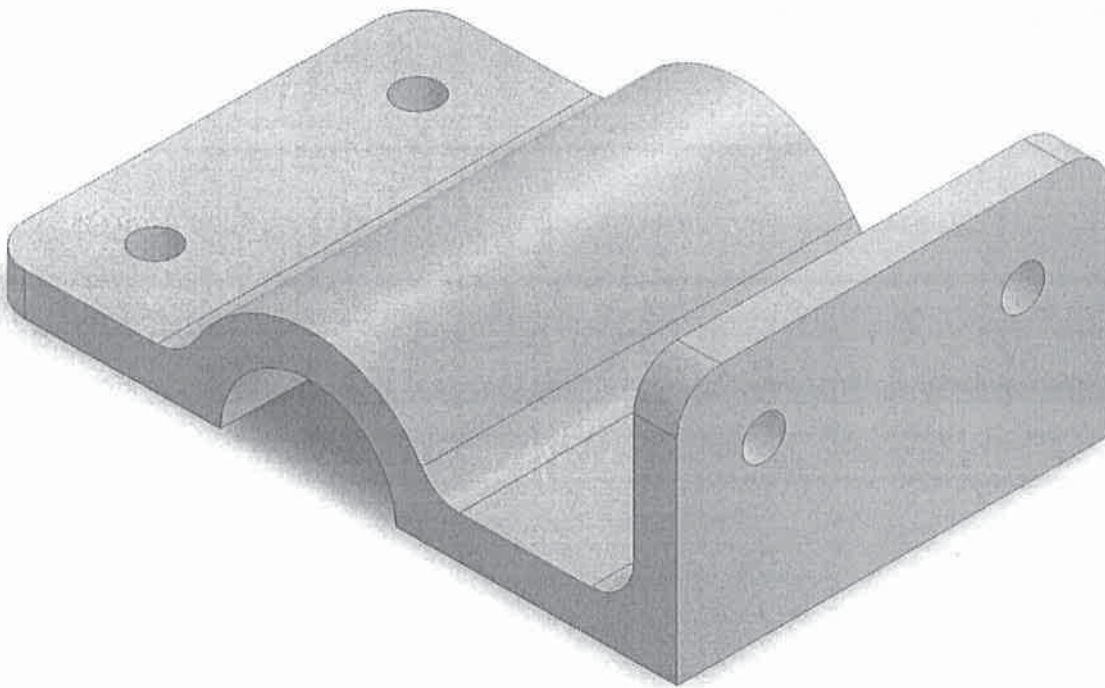
NOTES

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. Five (5) 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

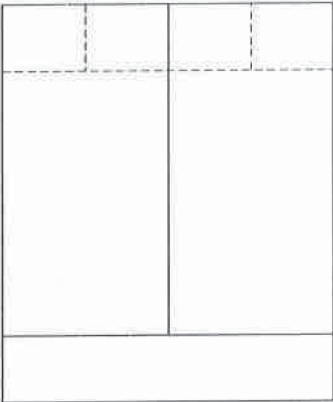
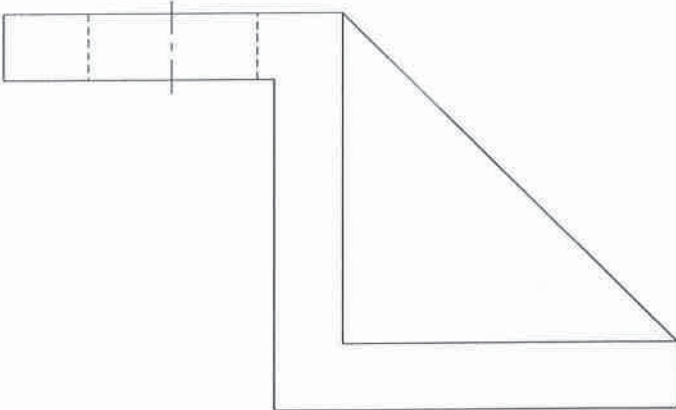
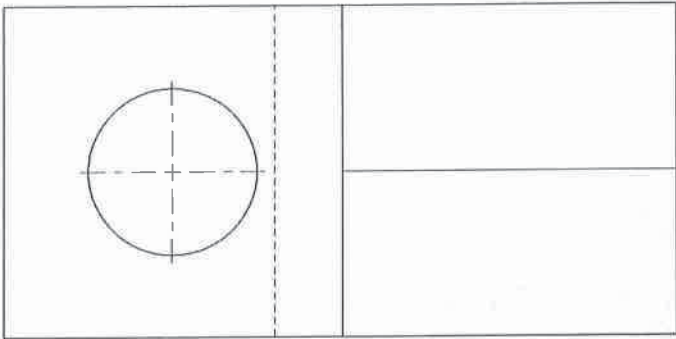
For the part shown below,

- a) Sketch an appropriate set of orthographic views, using third-angle projection. (10 marks)
- b) Fully dimension the sketch in part a) using professional standards. Use “xx” in place of numerical values in the dimensions. (10 marks)
- c) Describe and sketch an appropriate sequence of feature-based solid modelling operations that could be used to create this geometry using 3D CAD software. (15 marks)
- d) Describe and discuss appropriate manufacturing methods for this part, and any issues that might arise. (15 marks)



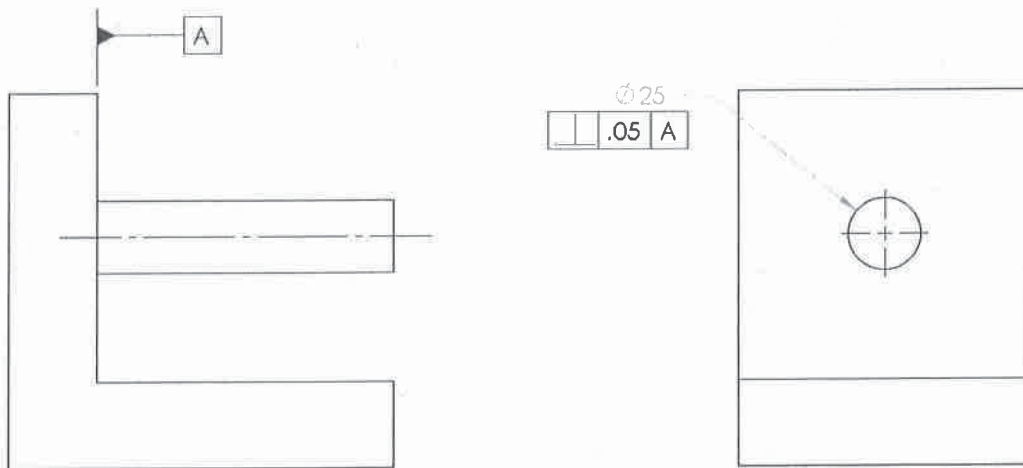
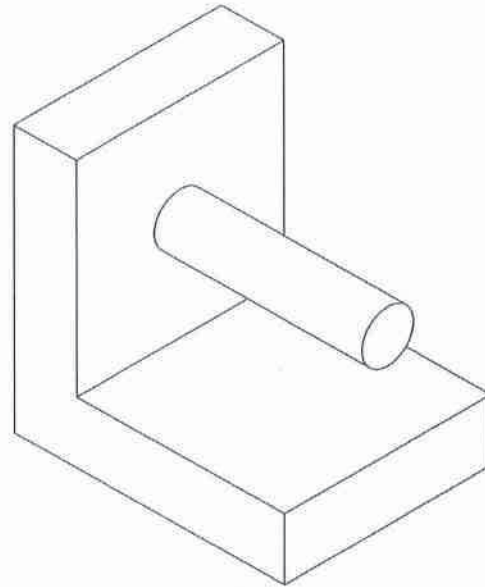
QUESTION 2

For the multiview drawing shown below, sketch an isometric view. (10 marks)



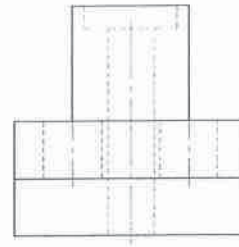
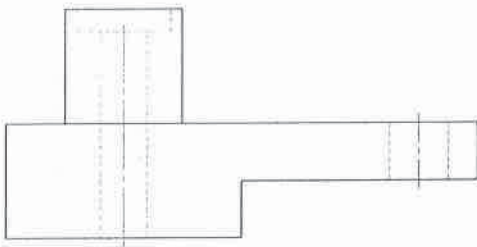
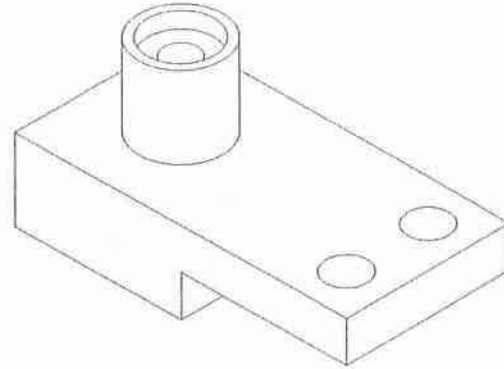
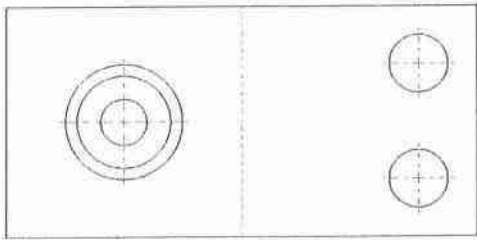
QUESTION 3

Explain the meaning of the GD&T annotations on the drawing below. (10 marks)



QUESTION 4

Sketch an appropriate section view for the part shown below. (10 marks)

**QUESTION 5**

Describe in as much detail as possible your understanding of the engineering design process, including key tools and methods that are commonly used. This is an open-ended question with no single correct answer. (20 marks)