

Engineering Studies

Section III (continued)

Marks

Question 18 — Engineering and the Engineering Report (10 marks)

- (a) Discuss the use of CAD systems as an alternative to traditional drawing methods. 3

..... CAD systems provide a quicker more efficient
..... drawing. With the use of CAD systems
..... changes can often be made to the drawing
..... with minimal effort. CAD system also reduce
..... mis-interpretations due to different drawing
..... styles. The drawing are also of greater
..... quality due to straighter lines and more
..... exact angles.
.....

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Question 18 (continued)

(b)



- (i) In many public areas, polymer containers similar to those shown are provided for rubbish and recyclable materials. Describe a forming process to produce the main body of these large containers. 2

These polymer containers can be moulded into a shape which is easy for rubbish collection and also the disposal of rubbish by society.

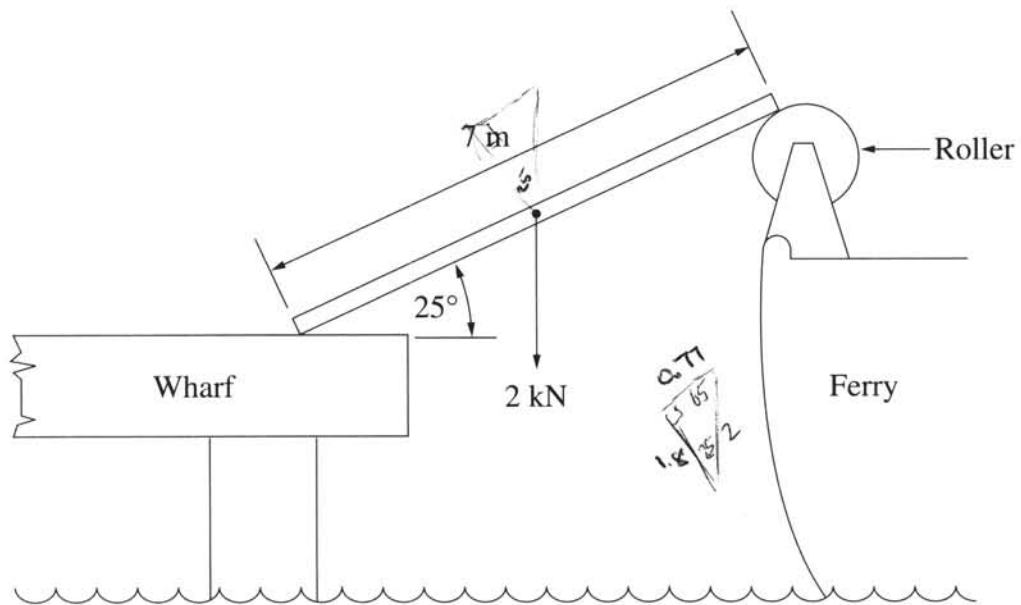
- (ii) The lids used for the containers are moulded from polyethylene. Outline the reasons for this being a suitable choice of material in service. 2

Polyethylene has great flexibility and is corrosion-resistant. These lids are lightweight which is a major advantage for society. The lids can also resist wear with them being opened and closed very often.

Question 18 continues on page 33

Question 18 (continued)

- (c) A loading ramp between a ferry and a wharf is shown. The ramp has a weight of 2 kN and a coefficient of static friction with the wharf of 0.2. There is no friction at the roller support. 3



Sketch a free-body diagram of the ramp. Show whether the ramp will slip or remain static for these conditions.



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