

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

The use of CAD systems gives
a computer based ~~2~~ three dimensional drawing
All dimensions are extremely accurate, and
no drawing errors can occur.

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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

The forming process involves casting in a ~~hot~~ mould. This gives every product the same smooth finish.

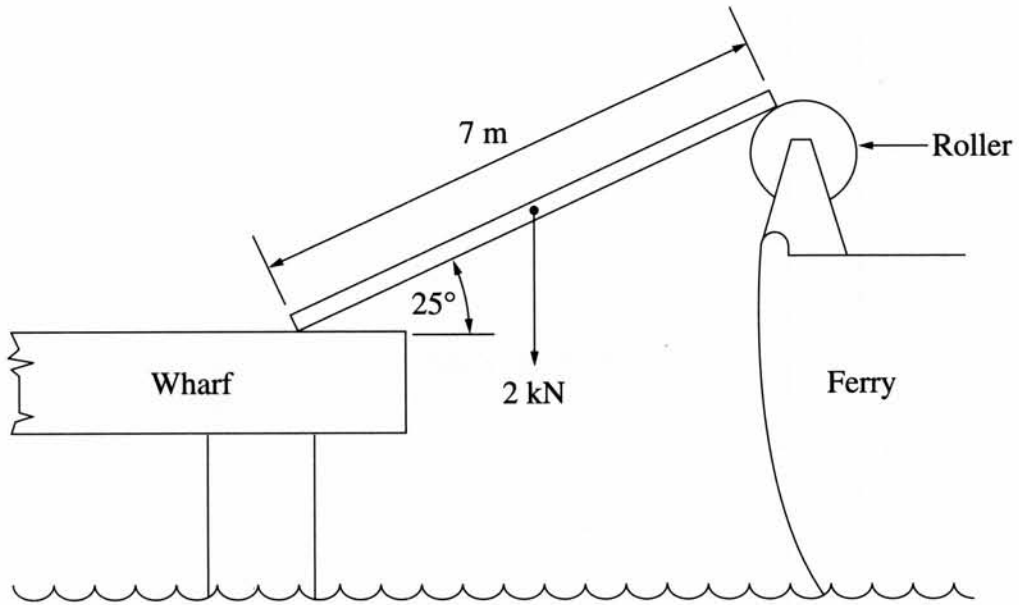
- (ii) The lids used for the containers are moulded from polyethylene. Outline the reasons for this being a suitable choice of material in service. 2

Polyethylene is very tough. The lid has to withstand weathering and slamming. Thus the need for a tough polymer.

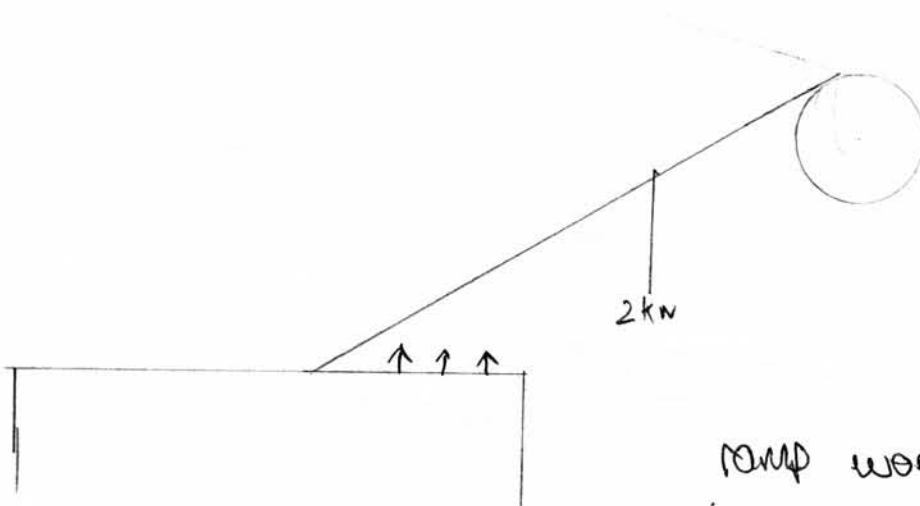
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Question 18 (continued)

- (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.



ramp won't slip because the upward force restricts it.

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