

# 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 is more accurate than  
traditional drawing methods.  
\* You don't have to be able to  
draw to use CAD.

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**Question 18 continues on page 32**

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

You could use a male - female  
 mould and inject the polymer  
 plastic into the mould.

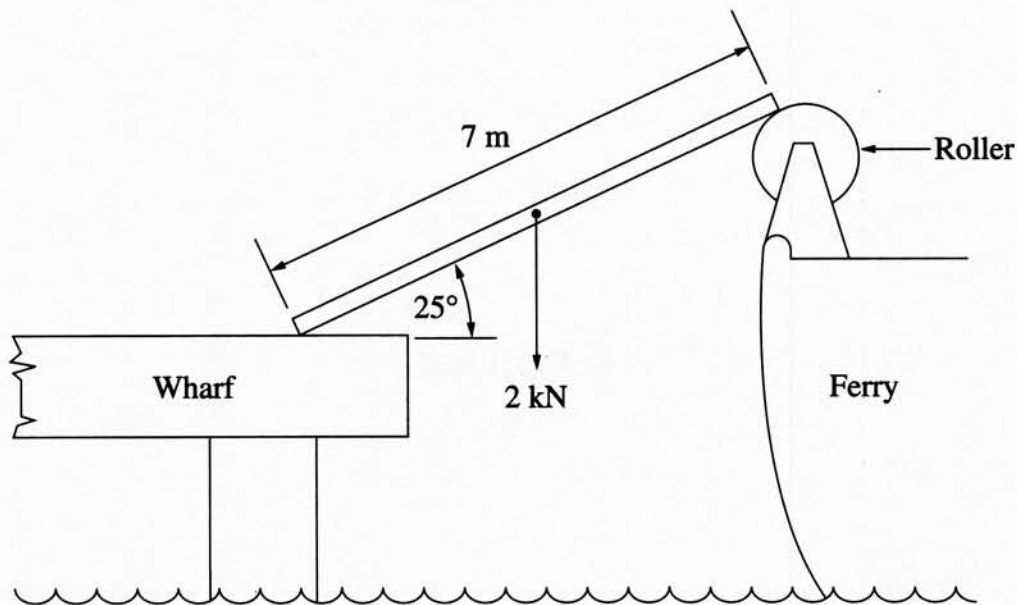
- (ii) The lids used for the containers are moulded from polyethylene. Outline the reasons for this being a suitable choice of material in service. 2

so that the lids are stronger.  
 (crystallinity)

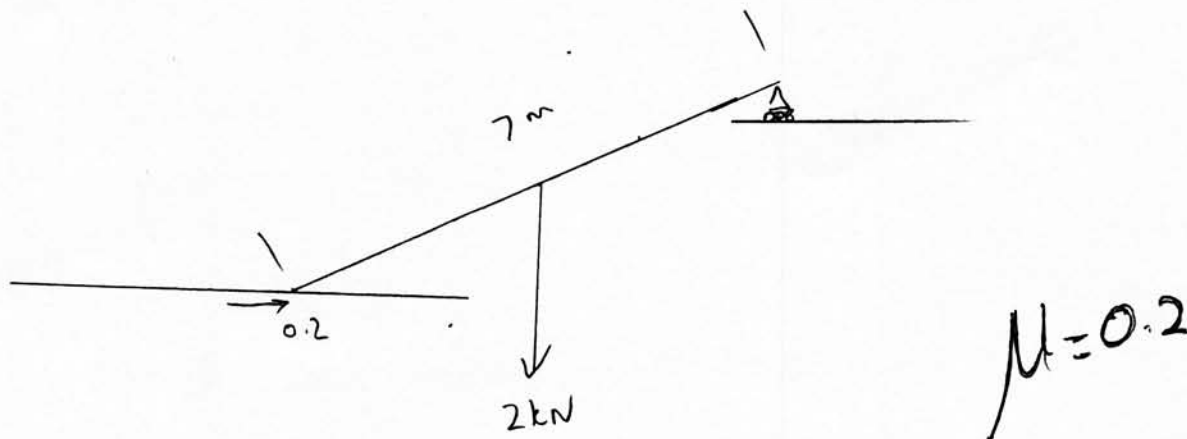
Question 18 continues on page 33

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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