

# 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 are often used  
as an alternative to traditional  
methods. CAD is however much  
better it can draw perfectly  
straight lines, circles etc.

CAD can also be used by anyone.

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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

*A process could be molding*

*The polymer would be injected into the mold and left to set*

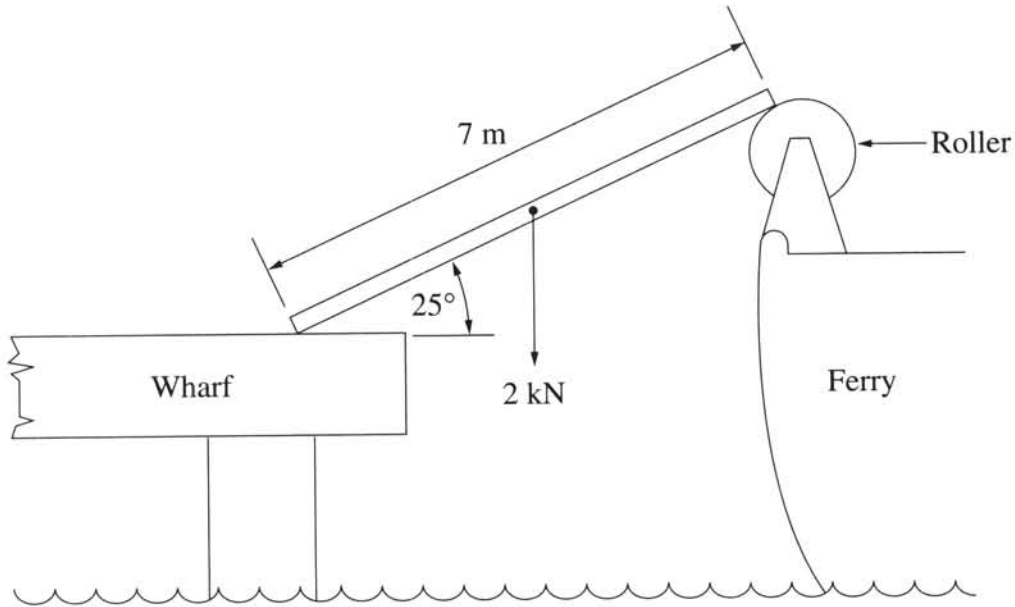
- (ii) The lids used for the containers are moulded from polyethylene. Outline the reasons for this being a suitable choice of material in service. 2

*It is extremely durable  
Can withstand day to day stresses.*

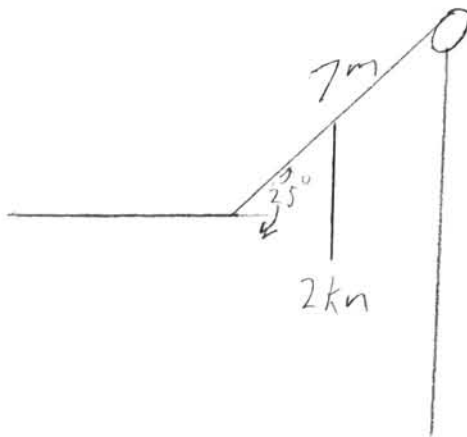
Question 18 continues on page 33

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.



The ramp would slip because of the lack of friction at the roller

~~The ramp will~~

End of paper