1 **(a)** Determine the SI base units of the moment of a force.

SI base units ..... [1]

(b) A uniform square sheet of card ABCD is freely pivoted by a pin at a point P. The card is held in a vertical plane by an external force in the position shown in Fig. 1.1.

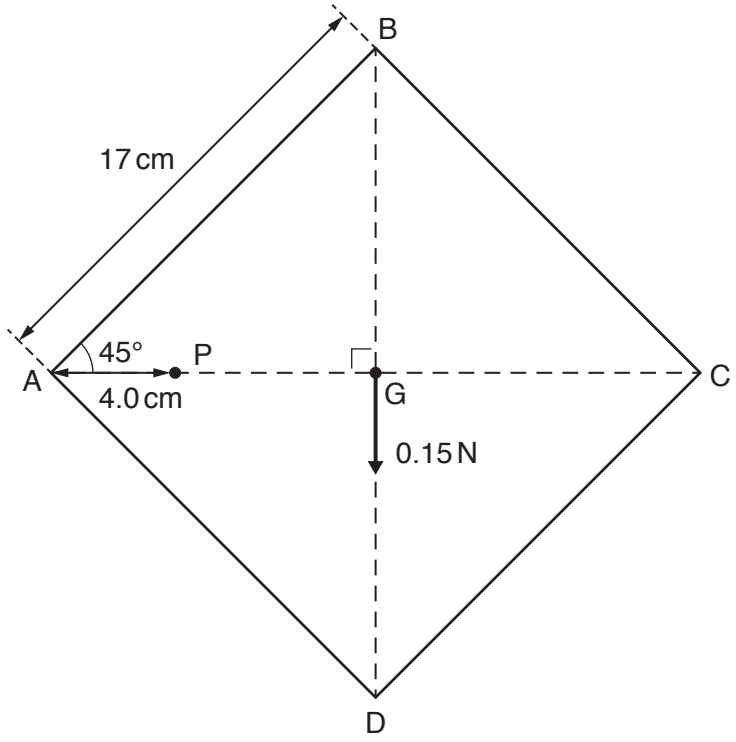

Fig. 1.1 (not to scale)

The card has weight 0.15 N which may be considered to act at the centre of gravity G. Each side of the card has length 17 cm. Point P lies on the horizontal line AC and is 4.0 cm from corner A. Line BD is vertical.

The card is released by removing the external force. The card then swings in a vertical plane until it comes to rest.

(i) Calculate the magnitude of the resultant moment about point P acting on the card immediately after it is released.

moment = ... N m [2]

(ii) Explain why, when the card has come to rest, its centre of gravity is vertically below point P.

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..... [2]

[Total: 5]