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IGCSE PHYSICS 0625 · TOPICAL PAST PAPERS

Turning Effect of Forces

Paper 1 — Multiple-Choice Questions (topical compilation)

Fahad H. Ahmad

Contact: [+92 323 509 4443](tel:+923235094443)

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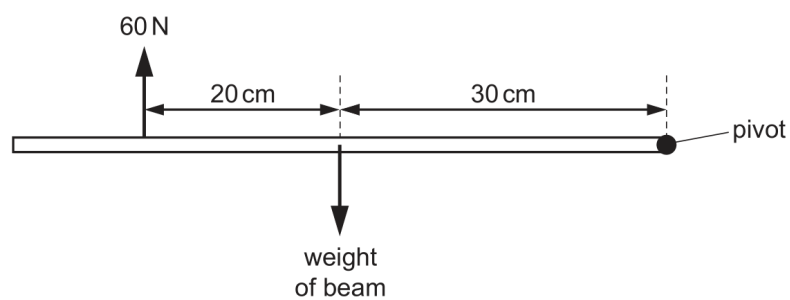
TURNING EFFECT OF FORCES

PAPER 1 QUESTIONS

Moments

QUESTION # 1: M/J 16 P11

- 9 A uniform horizontal beam, pivoted at its right-hand end, is in equilibrium. A force of 60 N acts vertically upwards on the beam as shown.

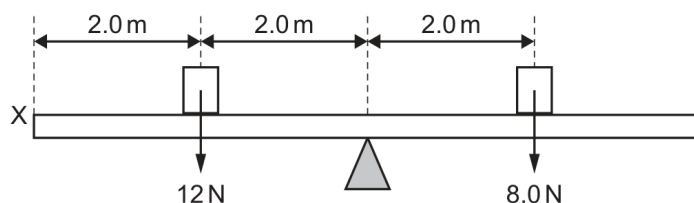


What is the weight of the beam?

- A** 36 N **B** 40 N **C** 90 N **D** 100 N

QUESTION # 2: M/J 16 P12

- 6 A uniform plank is pivoted at its mid-point. Two weights are added to the plank, one weight on each side of the pivot in the positions shown.



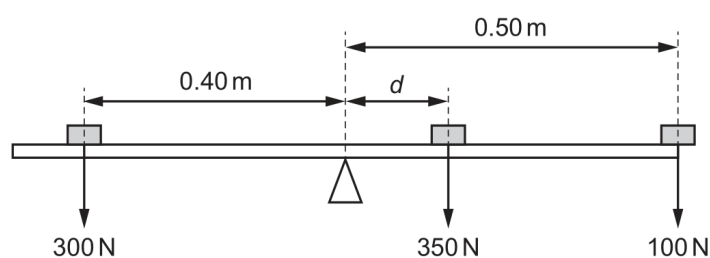
A vertical force is applied at point X to balance the plank.

What is the size and direction of this force?

	size / N	direction
A	2.0	downwards
B	2.0	upwards
C	4.0	downwards
D	4.0	upwards

QUESTION # 3: M/J 17 P11

- 12 A uniform beam is pivoted at its centre. The beam is balanced by three weights in the positions shown.

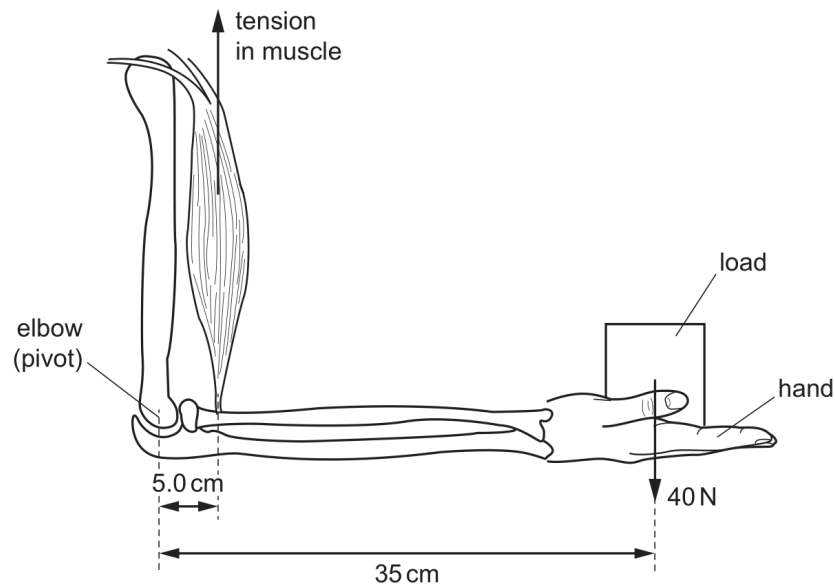


What is the length d ?

- A** 0.020 m **B** 0.050 m **C** 0.20 m **D** 0.48 m

QUESTION # 4: M/J 18 P11

- 9 The diagram shows a muscle and bones in a person's arm. The hand holds a load of weight 40 N. The elbow acts as a pivot and the tension in the muscle keeps the lower part of the arm horizontal.



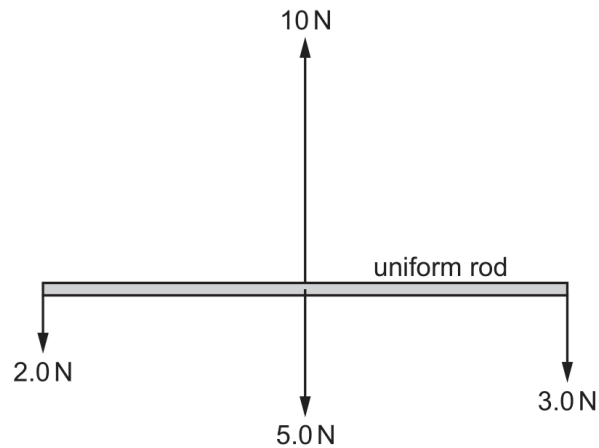
What is the tension in the muscle due to the load?

- A** 200 N **B** 240 N **C** 280 N **D** 1400 N

QUESTION # 5: M/J 18 P12

7 A uniform rod of weight 5.0 N is held initially at rest.

The diagram shows the forces acting on the rod when it is released.



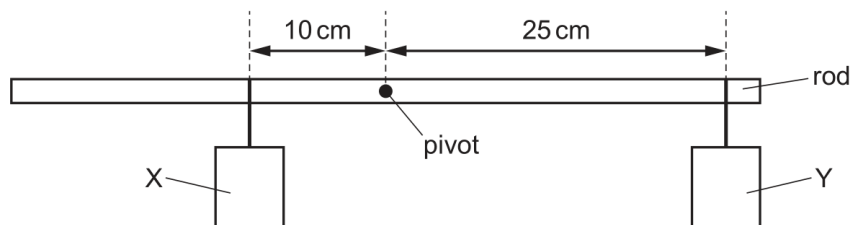
What happens to the rod when it is released?

- A It does not move.
- B It moves to the right.
- C It moves upwards.
- D It starts to rotate.

QUESTION # 6: M/J 18 P12

10 Two objects X and Y are suspended from a uniform rod, pivoted at its centre.

The rod is in equilibrium.

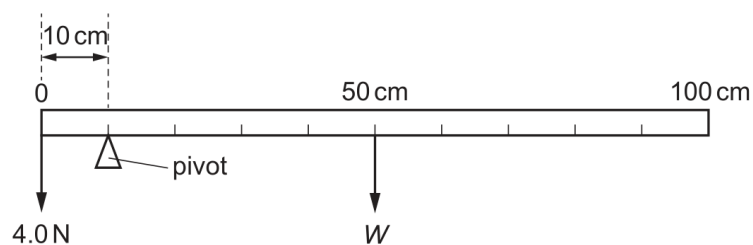


Which statement about X and Y is correct?

- A** The mass of X is 0.4 times the mass of Y.
- B** The mass of X is 2.5 times the mass of Y.
- C** The mass of X is 3.5 times the mass of Y.
- D** The mass of X is equal to the mass of Y.

QUESTION # 7: M/J 19 P11

9 A uniform metre rule is balanced by a 4.0 N weight as shown.

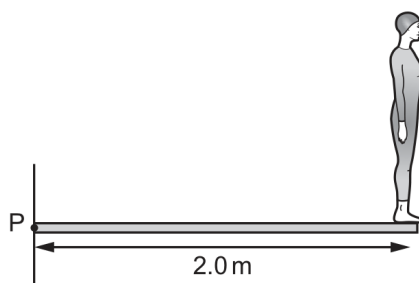


What is the weight W of the metre rule?

- A** 1.0 N **B** 4.0 N **C** 16 N **D** 40 N

QUESTION # 8: O/N 17 P12

- 7 A diver of weight 500 N stands at the end of a springboard that is 2.0 m long and is fixed at point P.



The springboard has a weight of 500 N. The centre of mass of the springboard is in the centre of the board.

What is the total moment about point P of the diver and the board?

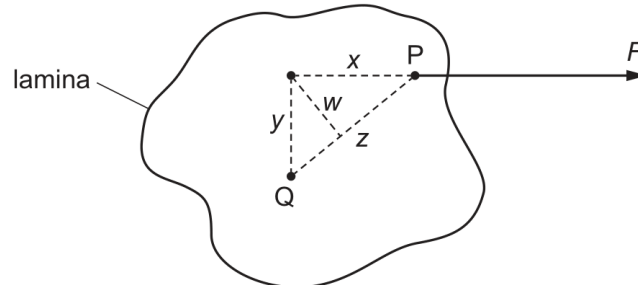
- A** 500 N m **B** 750 N m **C** 1000 N m **D** 1500 N m

QUESTION # 9: O/N 19 P11

- 11 What is an expression for the moment of a force about a pivot?
- A** distance the force moves from the pivot $\div$ force
- B** force $\times$ distance the force moves from the pivot
- C** force $\times$ perpendicular distance of the force from the pivot
- D** force $\div$ perpendicular distance of the force from the pivot

QUESTION # 10: O/N 20 P11

10 A length of thread is attached to a lamina at point P, as shown in the diagram.



The lamina is free to rotate about point Q.

The tension in the thread is F .

What is the moment of F about Q?

A Fw

B Fx

C Fy

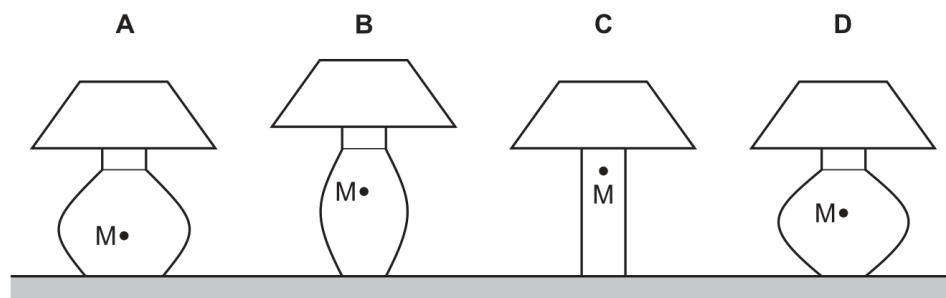
D Fz

Centre of mass and Stability

QUESTION # 1: M/J 16 P11

10 Four table lamps are shown along with the position M of the centre of mass in each case.

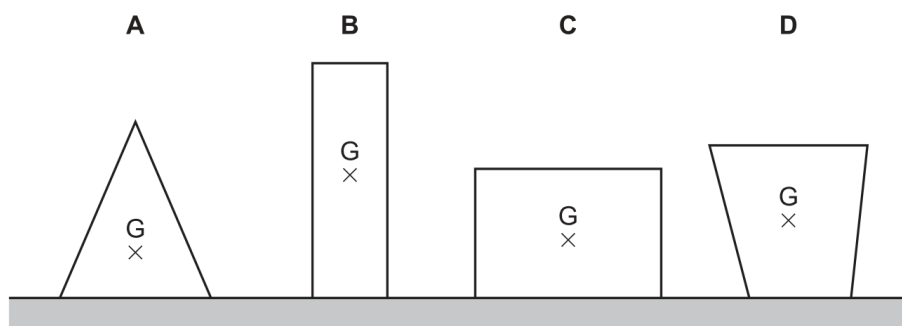
Which lamp is the most stable?



QUESTION # 2: M/J 18 P11

10 Four objects of equal mass rest on a table. The centre of mass of each object is labelled G.

Which object is the least stable?



QUESTION # 3: M/J 19 P11

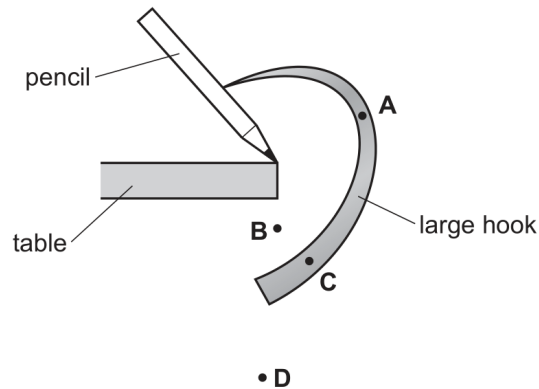
10 Which statement about centre of mass is correct?

- A Objects with a centre of mass at the same height are less stable when the base is larger.
- B Objects with a centre of mass at the same height are more stable when the base is larger.
- C Objects with higher centres of mass and smaller bases are more stable.
- D Objects with identical bases are more stable when the centre of mass is higher.

QUESTION # 4: M/J 19 P12

- 11 A large hook sticks into a pencil. The hook and pencil are balanced on the edge of a table, as shown.

Where is the centre of mass of the hook and pencil?

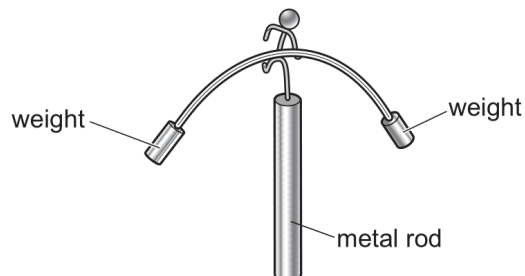
**QUESTION # 5: M/J 20 P12**

- 11 Which single item can be used to find the centre of mass of a plane lamina of irregular shape?

- A a balance
- B a measuring tape
- C a micrometer
- D a vertical pin

QUESTION # 6: M/J 20 P12

12 A student makes a model toy which balances on the end of a metal rod.



Why are the weights needed?

- A They increase the pressure on the rod.
- B They increase the weight of the model.
- C They lower the centre of mass below the top of the rod.
- D They raise the centre of mass above the top of the rod.

QUESTION # 7: O/N 19 P11

12 A student balances a non-uniform object on a pivot. To do this, a weight is suspended near the left-hand end of the object, as shown.

Where is the centre of mass of the object?

