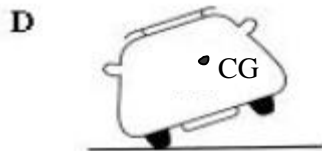
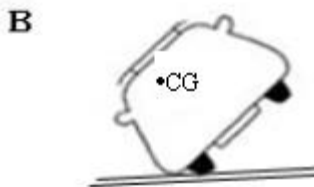


Chapter 16 Stability

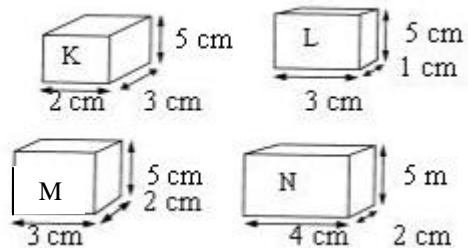
Paper 1

Answer **all** questions. Each question is followed by four options, **A**, **B**, **C** and **D**. For each question, choose **one** answer only.

1. The following diagrams show four positions of a car. CG represents the position of the centre of gravity. Which car with the following positions will topple over?



2.



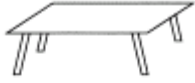
The diagram above shows four wooden blocks *K*, *L*, *M* and *N*. The four wooden blocks are put side by side on a plank. If the plank is tilted slowly, which wooden block will topple first?

- A** *K*
B *L*
C *M*

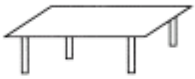
D N

3. Which of the following tables is the **most** stable?

A



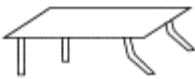
B



C



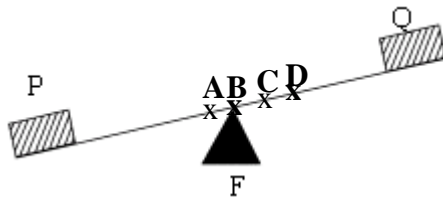
D



4. What must be done to a racing car to make it more stable?

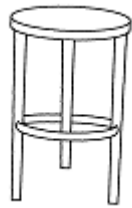
- A Use smaller tyres
- B Reduce the area of the base of the car
- C Lower the body of the car
- D Reduce the weight of the car

5.



In the lever system shown in the above diagram, the mass of load P is more than the mass of load Q . Which of the following position could be the point of equilibrium?

6.



The chair in the diagram above can be made more stable by

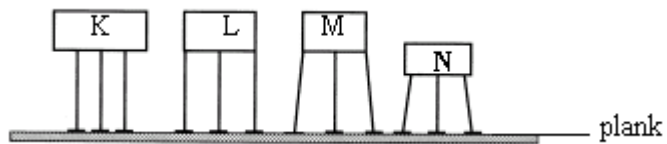
- A lengthening its legs
- B shortening its legs
- C changing the seat to a bigger one
- D increasing the weight of the seat

7. Factors influencing the stability of a certain object include

- I the weight of the object
- II the base area of the object
- III the position of the centre of gravity

- A I and II only
- B I and III only
- C II and III only
- D I, II and III

8.



The diagram above shows four wooden blocks. Which wooden blocks will topple over first when the plank is tilted slowly?

- A *K*
- B *L*
- C *M*
- D *N*

9. Among the following objects, which is the **most** stable?

A



B



C



D



10. Why does the Bunsen burner have a wide and heavy base?

- A To support its chimney
- B To achieve greater stability
- C To make it look attractive
- D To allow gas to flow out easily

11. A double-decker bus will be more stable if it

- I does not allow passengers to put heavy things at the lower deck
- II does not allow passengers to stand at the upper deck
- III fills the lower deck with passengers first

- A I only
- B I and II only
- C II and III only
- D I, II, and III

12. Among the following objects, which has a wide and heavy base so that it is not easy to topple over?

- I** Racing car
- II** Electric table fan
- III** Bunsen burner

- A** I only
- B** I and II only
- C** II and III only
- D** I, II, and III

13. A table will become more stable if

- I** its legs are shortened
- II** its base area is increased
- III** more things are placed on top of it

- A** I only
- B** I and II only
- C** II and III only
- D** I, II, and III

14. A racing car is more stable than a normal car because

- I** it is lighter
- II** its base area is bigger
- III** the position of its centre of gravity is lower

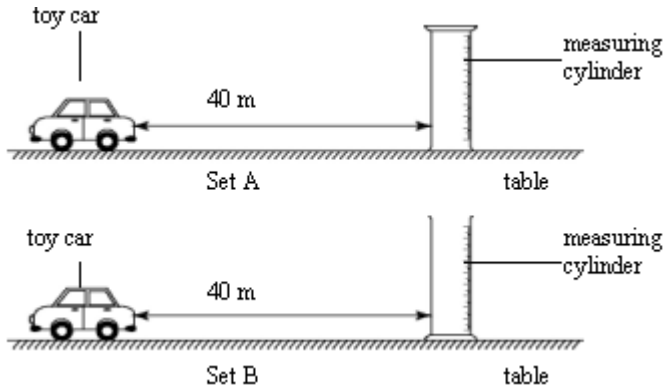
- A** I only
- B** I and II only
- C** II and III only
- D** I, II, and III

15. A giraffe stretches its legs wide apart while drinking water in order to

- I** reach the water
- II** lower its centre of gravity
- III** increase the area of its base

- A** I only
- B** I and II only
- C** II and III only
- D** I, II, and III

Paper 2
 Answer the question.



An experiment was set up as shown above to study the stability of objects. The following steps were carried out.

- S1** Two similar measuring cylinders were placed on a table. A measuring cylinder was placed upside down.
- S2** Two similar toy cars were wound up and placed 40 cm away from the respective measuring cylinders.
- S3** The toy cars were released towards the measuring cylinders.

(a) What is the relationship between the weight of the base and the stability of objects?

(b) State the variables involved in this experiment.

Manipulated variable	
Responding variable	
Constant variable	

(c) What can be observed in this experiment?

(d) (i) Which measuring cylinder is more stable?

(ii) Explain your answer in (c)(i).

(e) State **two** other factors that affect the stability of measuring cylinder in this experiment.

(i) _____

(ii) _____

Answers:

Paper 1

1	B	11	C
2	B	12	D
3	A	13	B
4	C	14	C
5	A	15	C
6	B		
7	D		
8	A		
9	B		
10	B		

Paper 2

- (a) The heavier the base of an object, the more stable is the object.
- (b) Manipulated variable: The positions of the measuring cylinders (whether correct side up or upside down)
Responding variable: Stability of measuring cylinder
Constant variable: Distance between the toy cars and the measuring cylinders / Type of measuring cylinders
- (c) The measuring cylinder in Set *A* topples first
- (d) (i) Measuring cylinder in Set *B*.
(ii) Measuring cylinder in Set *B* has a heavier base.
- (e) (i) The position of the centre of gravity
(ii) The base area of the object