THE INTERNATIONAL SCHOOL BANGALORE

ENTRANCE ASSESSMENT

SUBJECT: Physics

GRADE: 11

TOTAL MARKS: 15 MARKS

TIME ALLOWED: 20 MINUTES

TEST DATE:

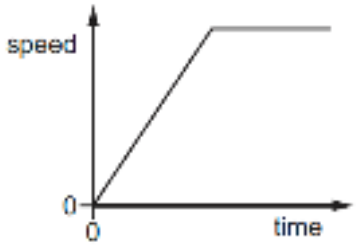
APPLICANT'SNAME:

INSTRUCTIONS:

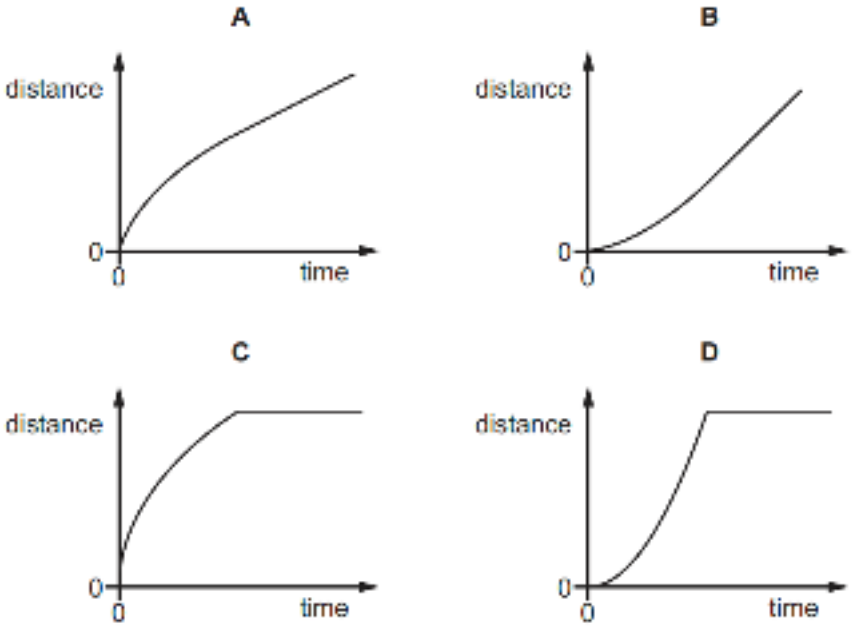
- No Calculators are allowed**.**
- All questions are compulsory, please use a pen.
- Please circle only one correct answer from the given options.
- Return the question papers and the rough sheets to the invigilator before leaving the hall.

This Question Paper consists of 5 printed pages including this cover page

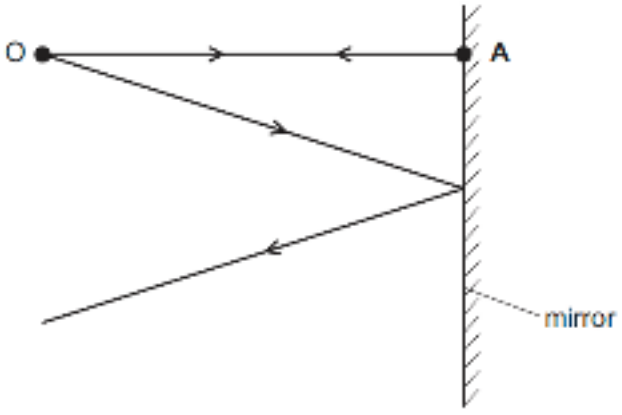
1. A speed–time graph for the journey of a car is shown.



What is the distance–time graph for the journey?



2. The diagram shows two divergent rays of light from an object O being reflected from a plane mirror. At which position is the image formed?

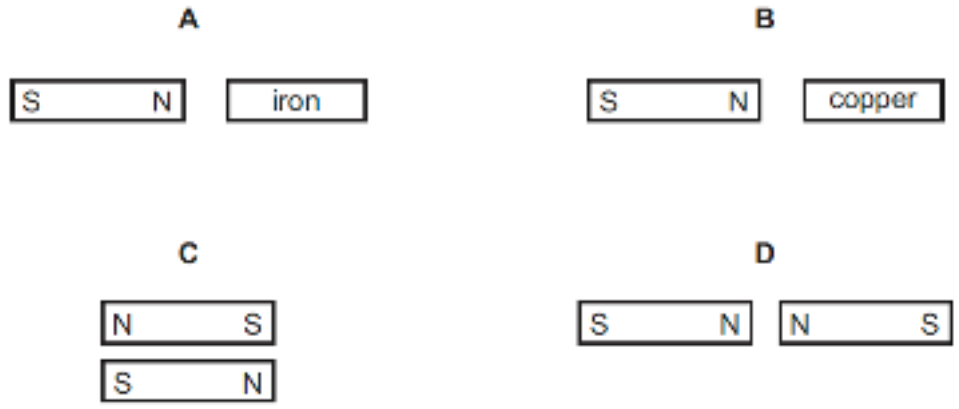


- B
- C
- D

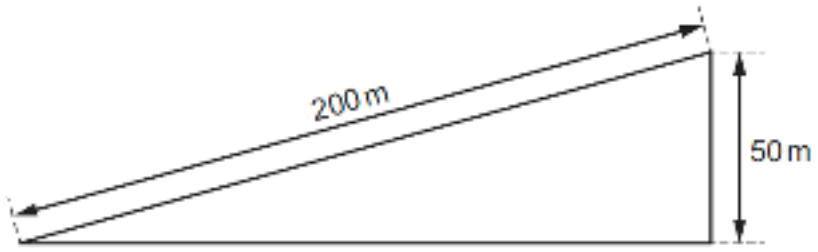
3. The nucleus of an atom emits an alpha-particle. How do the proton number and nucleon number change?

	proton number	nucleon number
A	decreases by 2	decreases by 4
B	decreases by 4	decreases by 2
C	increases by 2	increases by 4
D	increases by 4	increases by 2

4. Bar magnets and various non-magnetic and demagnetised metal bars are placed in the different arrangements shown. In which arrangement do the bars repel?



5. A car of mass 1000 kg is driven 200 m up an incline so that it rises 50 m vertically.



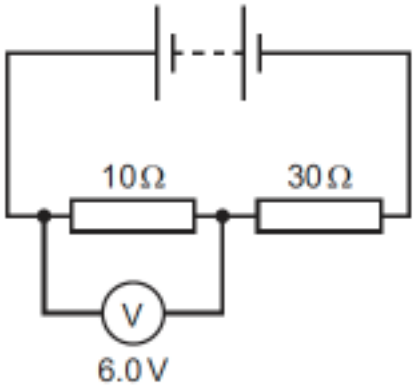
The acceleration of free fall g is 10 m / s^2. What is the gain in gravitational potential energy?

A 5000 J **B** 200 000 J **C** 500 000 J **D** 2 000 000 J

6. The energy generated in stable stars comes from nuclear reactions. Which type of reaction occurs in the Sun?

A Helium nuclei break up to give hydrogen nuclei.
B Helium nuclei join together to form hydrogen nuclei.
C Hydrogen nuclei break up to give helium nuclei.
D Hydrogen nuclei join together to form helium nuclei.

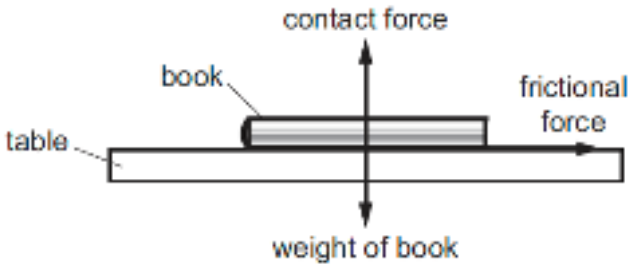
7. The diagram shows a circuit which includes two resistors and a battery.



The voltmeter reads 6.0 V.
What is the potential difference across the 30 Ω resistor?

A 2.0 V **B** 6.0 V **C** 18 V **D** 24 V

8. A train is travelling horizontally in a straight line. A book is on a table in the train.
The diagram shows all the forces acting on the book.



How is the train moving?
A accelerating to the left of the diagram
B accelerating to the right of the diagram
C moving at uniform speed to the left of the diagram
D moving at uniform speed to the right of the diagram

9. Some hot water is sealed inside a metal can. The can is in a vacuum in outer space. The hot water slowly cools down. How does the thermal energy escape into space?

A by conduction then convection
B by conduction then radiation
C by evaporation then convection
D by evaporation then radiation

10. A monochromatic ray of green light in air enters a block of glass.
Which property of the ray of light always remains the same as it moves from air to glass?

A wavelength
B speed
C frequency
D direction

11. A lamp rated 12 V, 2.0 A is switched on for one minute.
How much energy is transferred by the lamp?
A 6.0 J **B** 24 J **C** 360 J **D** 1440 J

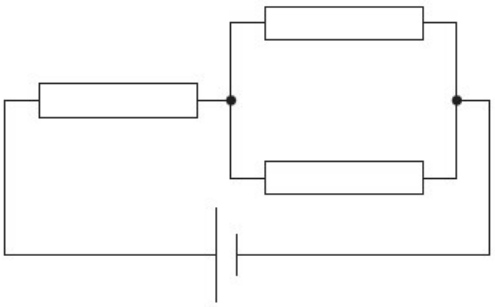
12. A heavy table has six legs. The area of cross-section of each leg is X.
The legs of the table make marks in a carpet. These marks become deeper with increased pressure.
What would reduce the depth of the marks for a table of a fixed weight?

A using three legs, each of an area smaller than X
B using four legs, each of an area the same as X
C using six legs, each of an area smaller than X
D using eight legs, each of an area the same as X

13. Evaporation occurs when molecules escape from a liquid surface into the air above it. During this process the temperature of the liquid falls.
Why does the temperature of the liquid fall?

A The molecules in the vapour expand because the pressure is less.
B The molecules left in the liquid have more space to move around.
C The molecules move more slowly when they escape into the air.
D The molecules with the highest energies escape into the air.

14. A cell of negligible internal resistance is connected to three identical resistors. The current in the cell is 3.0 A.



The resistors are now arranged in series. What is the new current in the cell?

A 1.0 A **B** 1.5 A **C** 3.0 A **D** 9.0 A

15. What is a possible frequency of an ultrasound wave?

A 0.1 kHz **B** 3 kHz **C** 10 kHz **D** 30 kHz