

International General Certificate of Secondary Education  
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

PHYSICS

0625/1

PAPER 1 Multiple Choice

Wednesday

17 MAY 1995

Morning

45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are forty questions in this paper. Answer all questions. For each question there are four possible answers, A, B, C and D. Choose the one you consider correct and record your choice in soft pencil on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

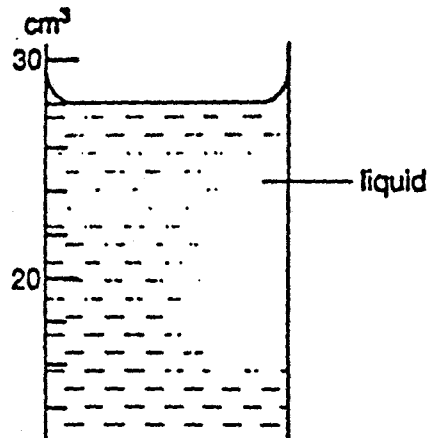
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

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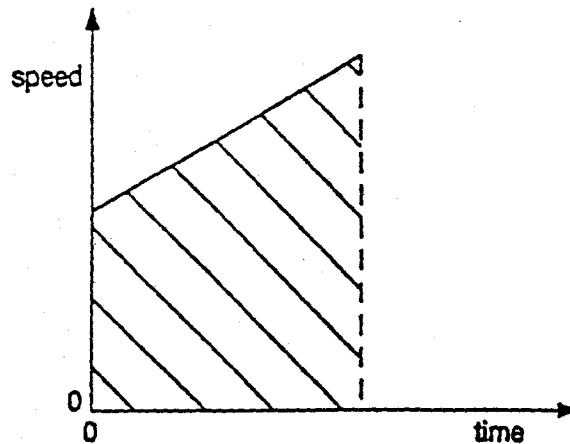
This question paper consists of 20 printed pages.

- 1 The diagram shows the level of liquid in a measuring cylinder.



What is the volume of the liquid?

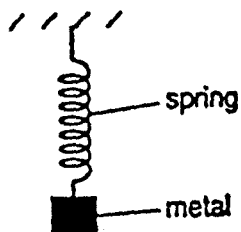
- A  $24 \text{ cm}^3$     B  $28 \text{ cm}^3$     C  $29 \text{ cm}^3$     D  $32 \text{ cm}^3$
- 2 The diagram shows a speed-time graph for a body moving with constant acceleration.



What is represented by the shaded area under the graph?

- A acceleration  
 B distance  
 C speed  
 D time

- 3 A spring is stretched by hanging a piece of metal from it.

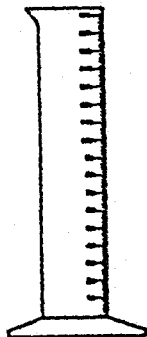


What is the name given to the force which stretches the spring?

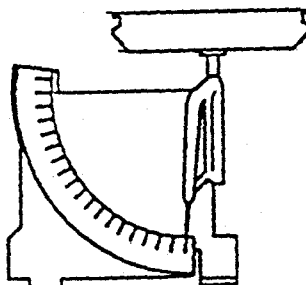
- A friction
  - B mass
  - C pressure
  - D weight
- 4 The diagram shows four pieces of laboratory apparatus.



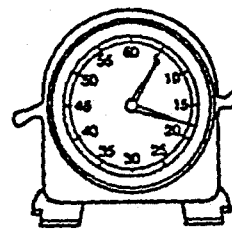
rule



measuring  
cylinder



balance

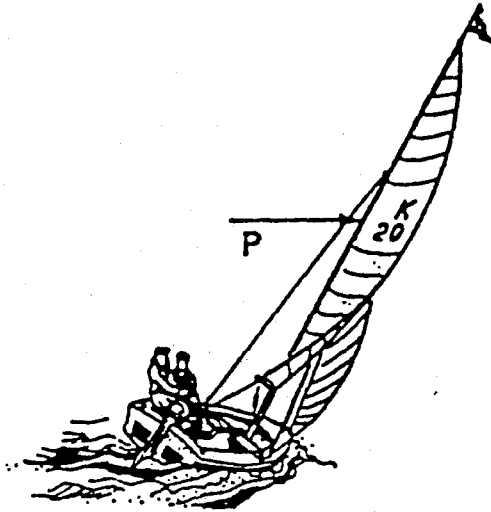


clock

Which pieces of apparatus are used to find the density of a liquid?

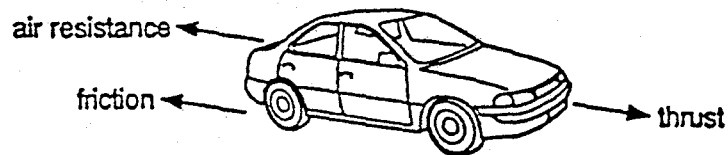
- A balance and clock
- B measuring cylinder and balance
- C rule and clock
- D rule and measuring cylinder

- 5 The diagram shows two people sailing a boat. The effect of the wind is to cause the force  $P$ .



Why is the boat less likely to be blown over by the wind if the people lean over the side as shown?

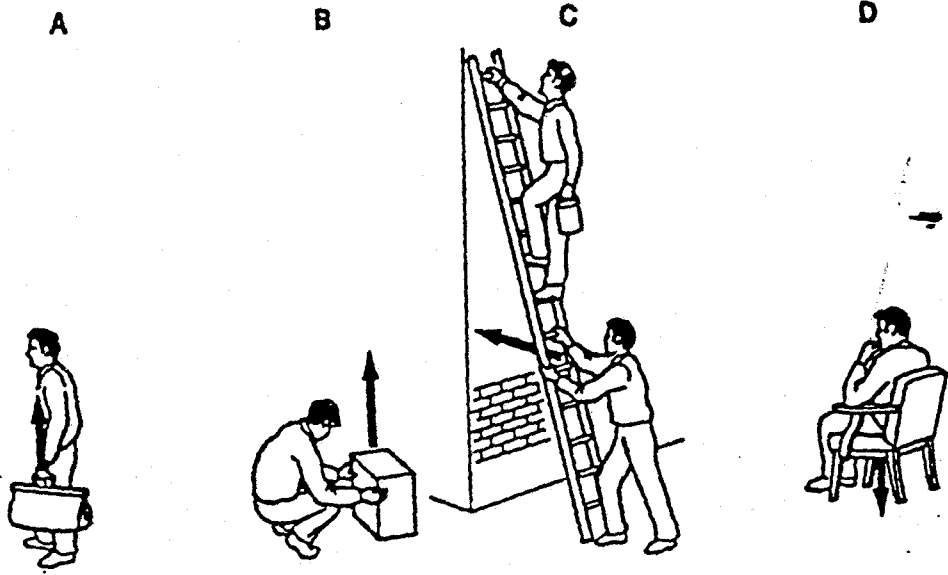
- A The people are causing a smaller pressure on the bottom of the boat.
  - B The people are making the boat heavier.
  - C The people can pull the boat upright using the ropes.
  - D The people cause a moment which helps to balance the moment of the force  $P$ .
- 6 A car is moving at constant speed under the action of the three forces shown.



Which set of forces could be correct?

|   | <i>air resistance</i> | <i>friction</i> | <i>thrust</i> |
|---|-----------------------|-----------------|---------------|
| A | 1000 N                | 3000 N          | 2000 N        |
| B | 2000 N                | 2000 N          | 3000 N        |
| C | 3000 N                | 1000 N          | 4000 N        |
| D | 4000 N                | 1000 N          | 6000 N        |

7 The arrow in each picture shows the direction of a force exerted by a person.  
Which picture shows work being done?



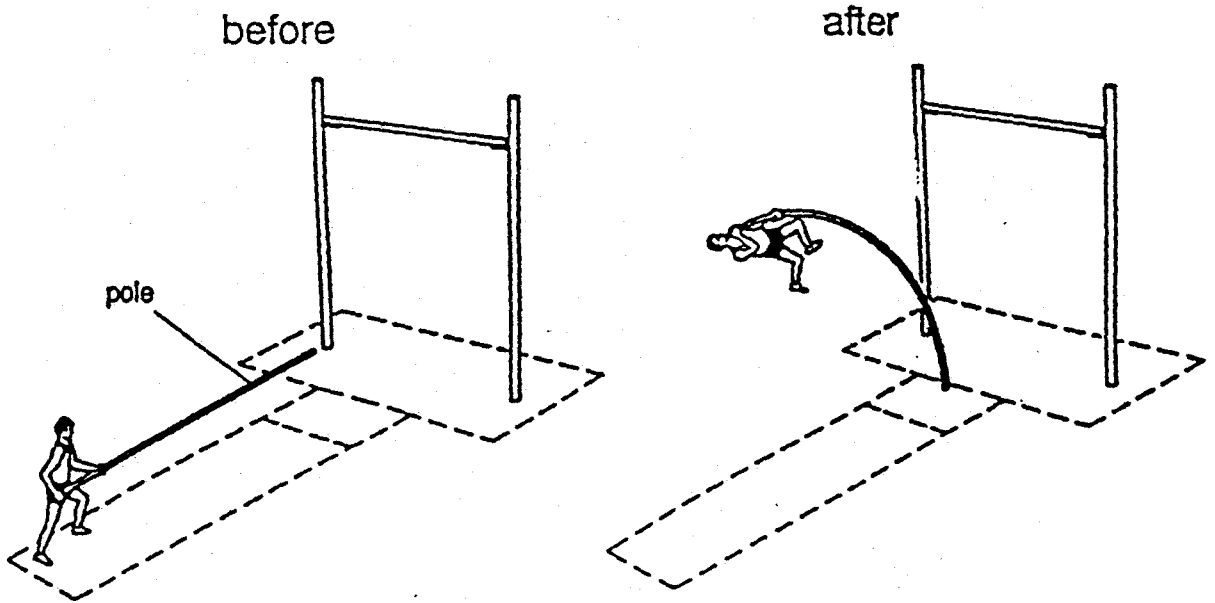
A standing holding a bag

B lifting up a box

C holding a ladder

D sitting on a chair

8 As a pole-vaulter runs up to a jump, his pole is straight. He puts one end down on the ground and the pole bends.

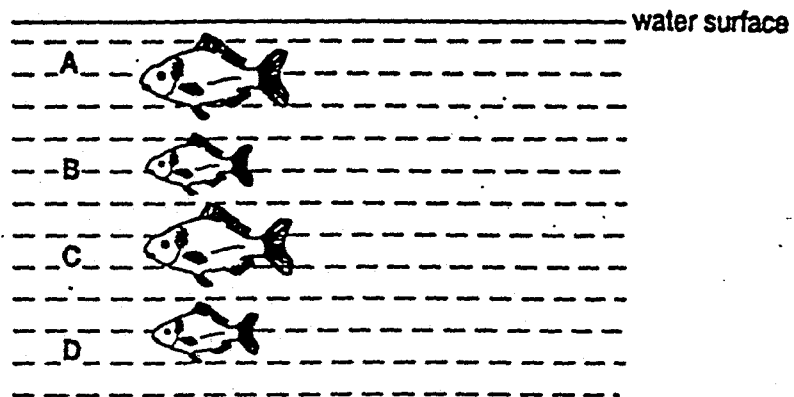


Which form of energy is stored in the pole because it is bent?

- A chemical
- B gravitational
- C motion
- D strain

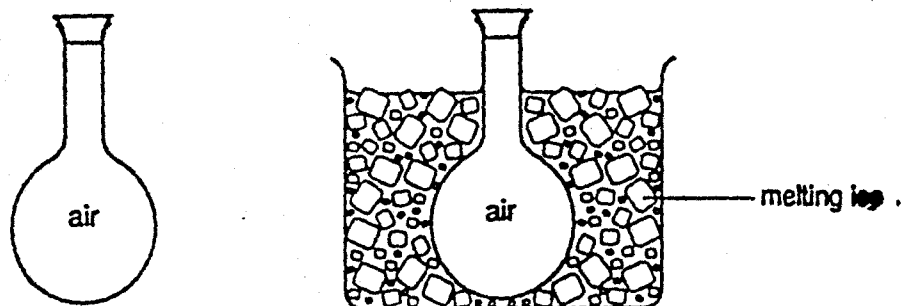
06270 515

- 9 The main purpose of an electric iron is to change electrical energy into
- A chemical energy.
  - B heat energy.
  - C light energy.
  - D sound energy.
- 10 Which fish has the greatest water pressure acting on it?



- 11 The molecules of a gas at room temperature
- A do not move.
  - B move about randomly.
  - C move around each other in orbits.
  - D vibrate about fixed positions.

- 12 A flask is filled with air and tightly stoppered at room temperature. The flask is then placed in melting ice. The flask stays the same size.



In the flask, what happens to the pressure of the air and the speed of the molecules in the air?

*pressure*      *speed of molecules*

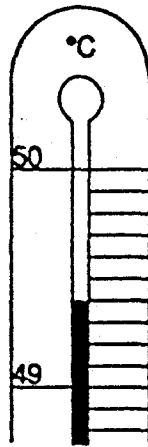
- A decreases      increases  
 B increases      increases  
 C decreases      decreases  
 D increases      decreases
- 13 In a melting-point experiment, a thermometer is placed in a test-tube of hot liquid. The temperature of the liquid is recorded every half minute. The table shows the results.

|                         |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <i>time / minutes</i>   | 0  | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| <i>temperature / °C</i> | 95 | 86  | 67  | 55  | 55  | 55  | 54  | 50  | 48  | 42  | 36  | 30  | 26  | 24  | 22  | 21  |

What is the melting point of the substance?

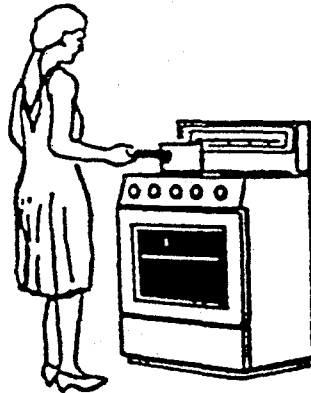
- A 0°C      B 21°C      C 55°C      D 95°C

- 14 The diagram shows part of the stem of a thermometer.



Which temperature is shown?

- A 49.04°C      B 49.4°C      C 50.6°C      D 56.0°C
- 15 The diagram shows a person about to lift a hot pan from a stove. Although the pan is hot, the handle is cool.

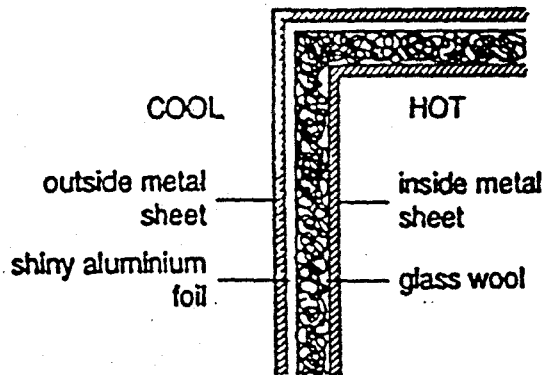


Which material was used for the handle?

- A aluminium  
 B copper  
 C iron  
 D wood

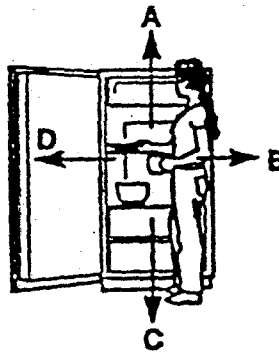


- 16 The wall of an oven is designed to reduce heat loss. The wall consists of two metal sheets. Between the metal sheets is a layer of glass wool and a sheet of shiny aluminium foil.

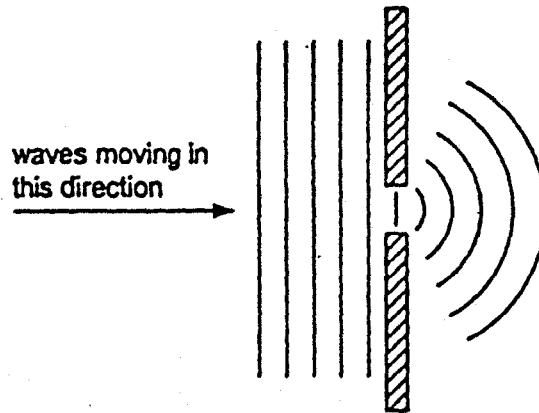


Which methods of heat loss are reduced by the glass wool and by the aluminium foil?

- |   | <i>glass wool</i> | <i>aluminium foil</i> |
|---|-------------------|-----------------------|
| A | convection        | conduction            |
| B | convection        | radiation             |
| C | radiation         | convection            |
| D | radiation         | conduction            |
- 17 A girl opens a refrigerator door. Cold air comes out of the refrigerator.  
In which direction does the cold air move?

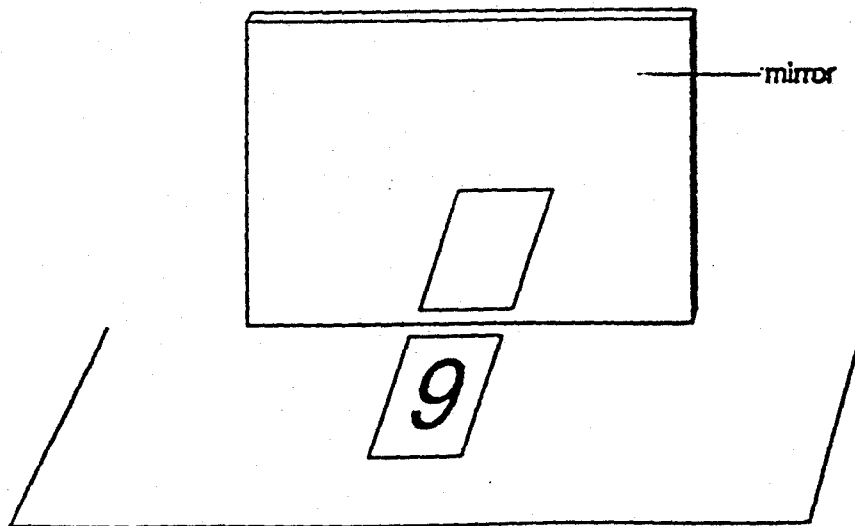


- 18 Plane waves produced in a ripple tank are incident on a barrier which has a small gap.

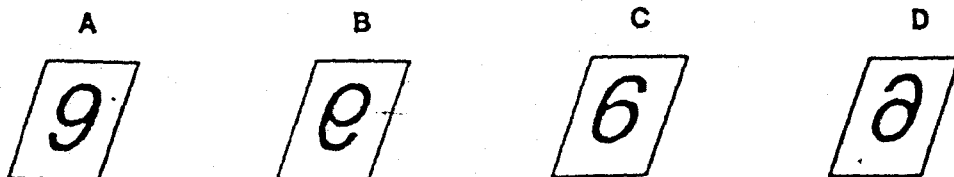


The wave pattern which is produced beyond the barrier is caused by

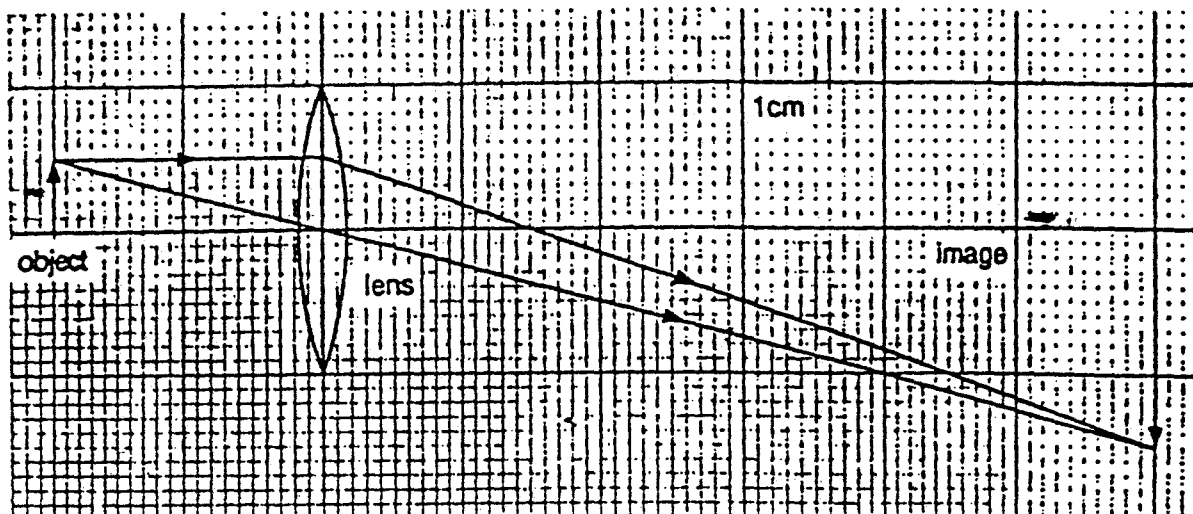
- A diffraction.
  - B dispersion.
  - C reflection.
  - D refraction.
- 19 The number 9 was drawn on a piece of paper which was placed in front of a plane mirror, as shown.



Which image would be seen in the mirror?



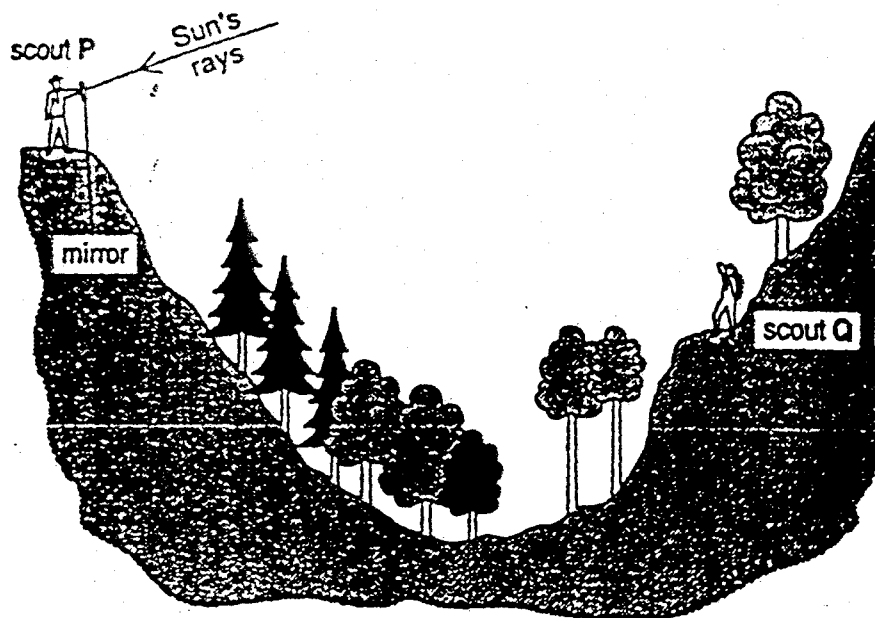
20 The ray diagram below shows the formation of a real image by a converging lens.



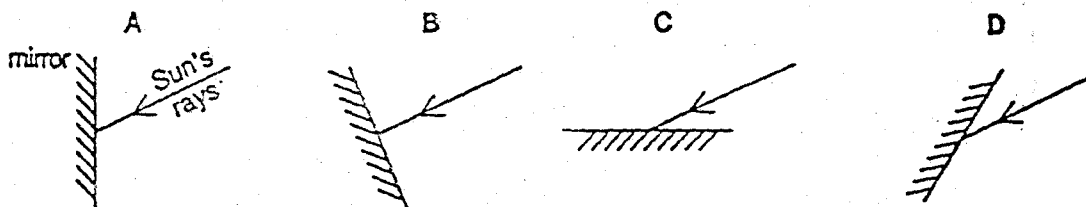
What is the focal length of the lens?

- A 3cm      B 4cm      C 7cm      D 10cm

- 21 Scout P signals to another scout Q on the other side of a valley by using a mirror to reflect the Sun's rays.



Which mirror position would allow the Sun's rays to be reflected to scout Q?

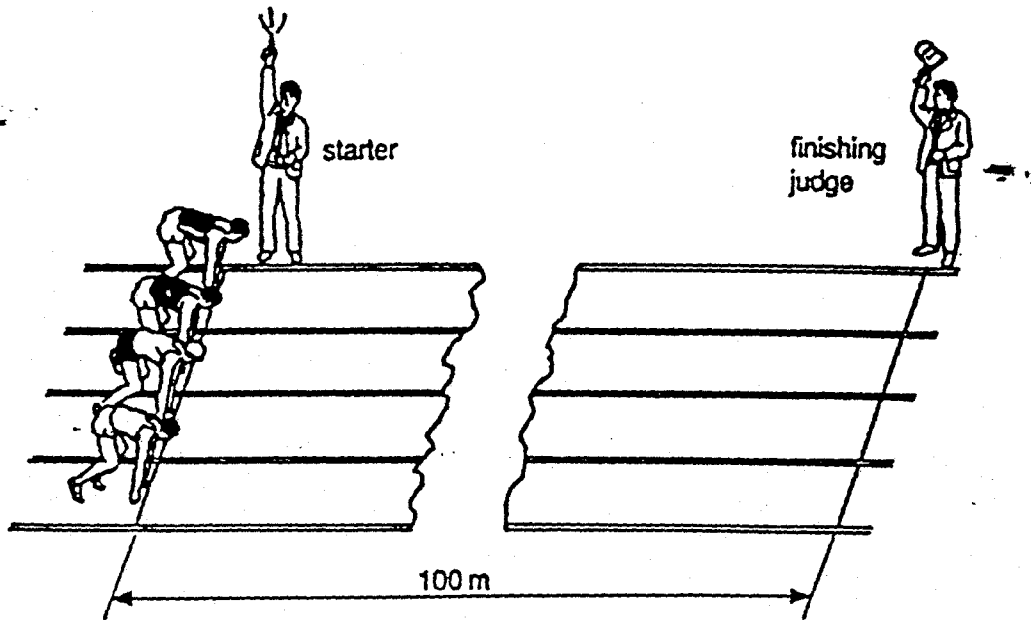


- 22 A student has a sound generator which has four ranges of frequency. He wishes to use it to test his teacher's hearing.

Which range would not be of use in this investigation?

- A 0 to 200 Hz
- B 200 to 2000 Hz
- C 2000 to 20 000 Hz
- D 20 000 to 200 000 Hz

- 23 A 100-metres race at an athletics meeting was started by the firing of a gun. As well as the sound of the explosion when the gun was fired, a puff of smoke came out of the gun as shown.

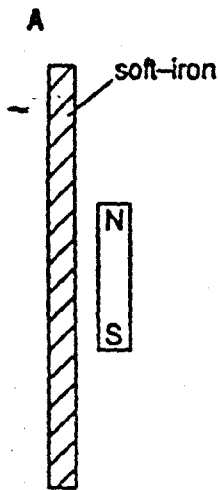


The finishing judge

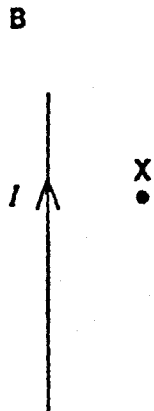
- A hears the sound of the explosion before he sees the puff of smoke come out of the gun.
- B hears the sound of the explosion and sees the puff of smoke come out of the gun at the same time.
- C neither hears the sound of the explosion nor sees the puff of smoke come out of the gun.
- D sees the puff of smoke come out of the gun before he hears the sound of the explosion.

24. The situations show magnetic effects.

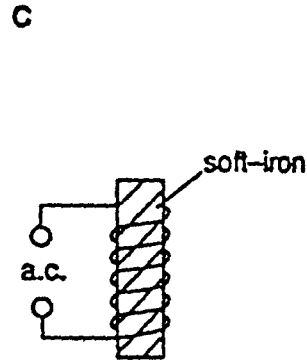
Which one is correctly described?



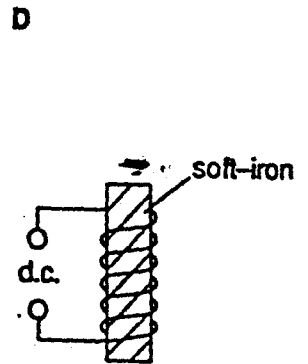
There is repulsion between the magnet and the soft-iron.



There is a magnetic field at X due to current I.



Magnetism is not induced in the soft-iron bar if the supply is a.c.

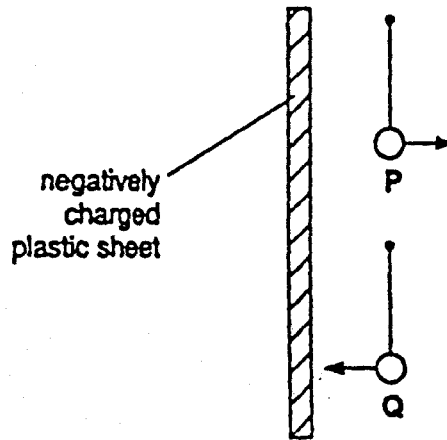


Magnetism is not induced in the soft-iron bar if the supply is d.c.

25. What is the best method of demagnetising a nail?

- A Place it in a north-south direction and hammer it.
- B Place it in a coil connected to a d.c. supply.
- C Slowly pull it out of a coil connected to an a.c. supply.
- D Stroke it slowly with another magnet.

- 26 Two very light, charged balls P and Q are hung, one above the other, from nylon threads. When a negatively charged plastic sheet is placed alongside them, P is repelled and Q is attracted.



What were the original charges on P and on Q?

- |   | <i>charge on P</i> | <i>charge on Q</i> |
|---|--------------------|--------------------|
| A | negative           | negative           |
| B | negative           | positive           |
| C | positive           | negative           |
| D | positive           | positive           |

- 27 How many of the following materials are good conductors of electricity?

*materials*

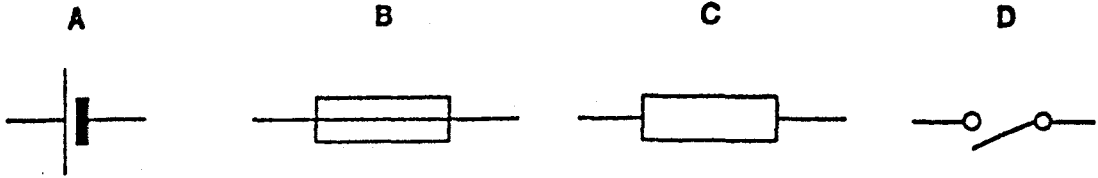
aluminium  
copper  
glass  
iron  
nylon  
paper  
plastic  
wood

- A 3      B 4      C 7      D 8

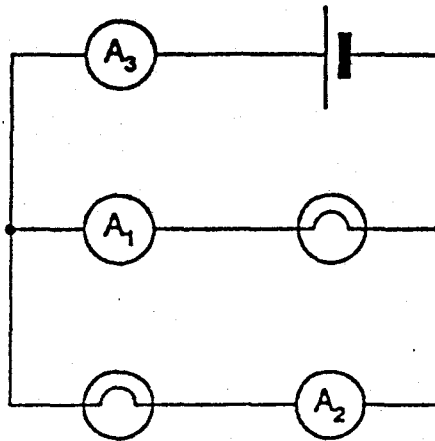
- 28 When there is an electric current in a conductor, there is always a flow of

- A atoms.  
B charge.  
C neutrons.  
D protons.

29 What is the symbol for a resistor?



30 The circuit shows two lamps of equal resistance and three identical ammeters.



Which ammeters give the same reading?

- A  $A_1$  and  $A_2$  only
- B  $A_2$  and  $A_3$  only
- C  $A_3$  and  $A_1$  only
- D  $A_1$ ,  $A_2$  and  $A_3$

31 A student connects the following components in a series circuit and securely closes the switch.

battery  
ammeter  
variable resistor  
switch  
13 A fuse  
5 A circuit-breaker  
1 A fuse

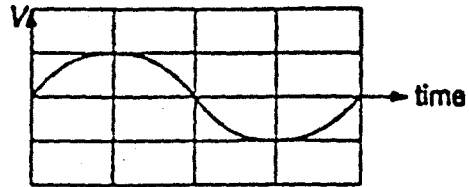
She gradually increases the current until the ammeter reading suddenly falls to zero.

Which component causes this sudden fall?

- A the 1 A fuse
- B the 5 A circuit-breaker
- C the 13 A fuse
- D the switch

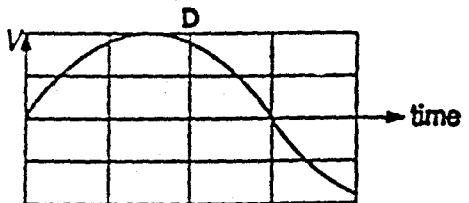
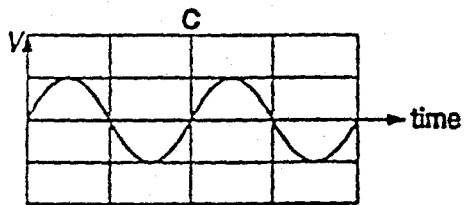
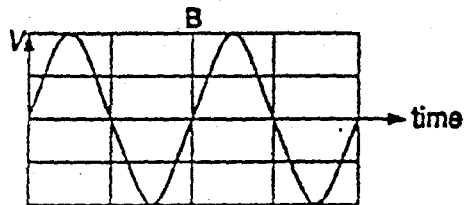
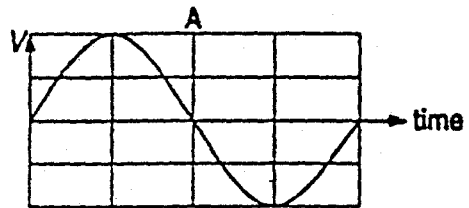


32 The graph shows the variation with time of the output voltage  $V$  for a rotating-coil generator.



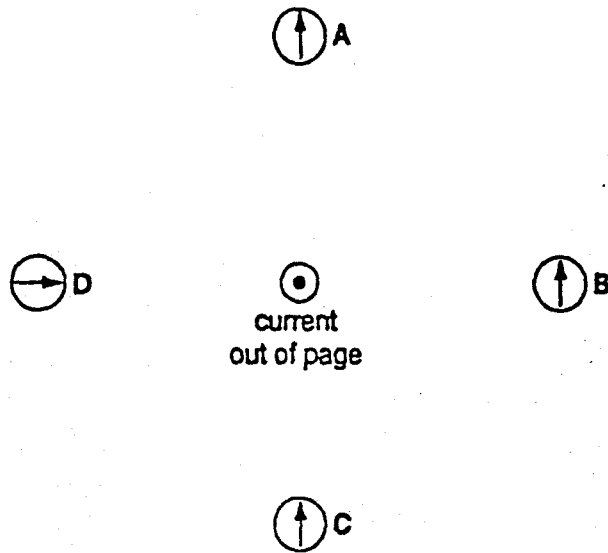
The coil of the generator is now made to rotate faster.

Which graph best shows the new voltage output?

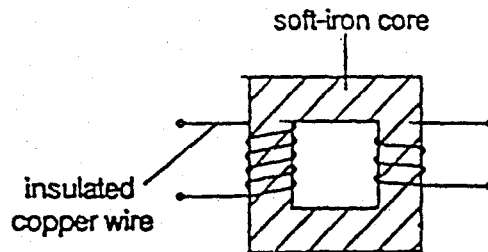


- 33 A wire perpendicular to the page carries an electric current in a direction out of the page. There are four compasses near the wire.

Which compass correctly shows the direction of the magnetic field caused by the current?



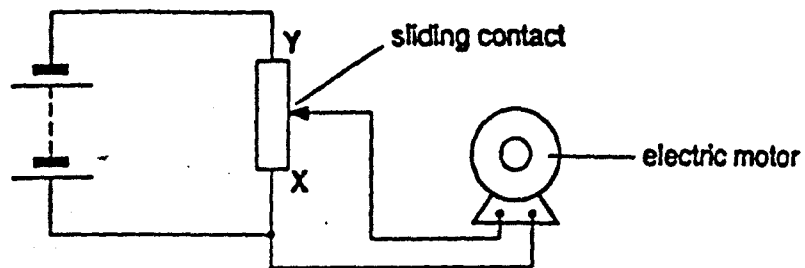
- 34 The diagram shows the main parts of a transformer.



Why is soft-iron used for the core?

- A Soft-iron is a good conductor of electricity.
- B Soft-iron is a good conductor of thermal energy.
- C Soft-iron is easy to charge electrically.
- D Soft-iron is easy to magnetise and demagnetise.

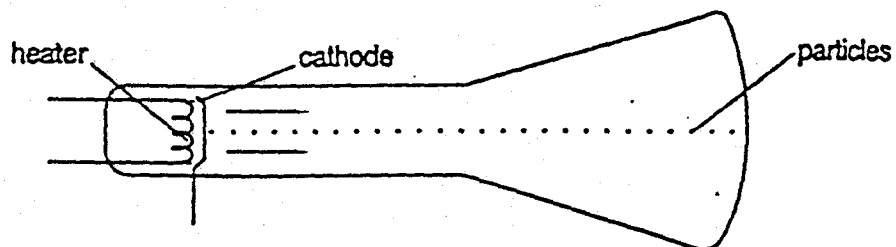
35 The circuit shown supplies a variable voltage to an electric motor.



What happens to the motor when the sliding contact is at end X?

- A The motor rotates more quickly.
- B The motor keeps rotating at the same speed.
- C The motor rotates more slowly.
- D The motor stops rotating.

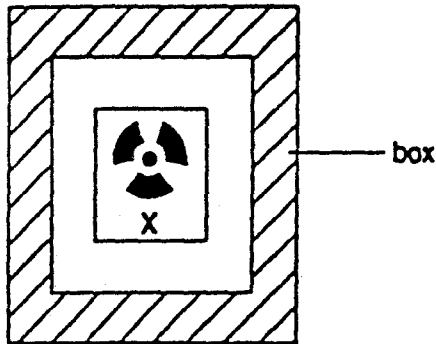
36 Particles are emitted by a heated cathode in a cathode-ray oscilloscope.



What are these particles?

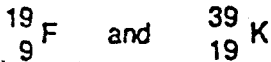
- A atoms
- B electrons
- C neutrons
- D protons

37 X is a source of gamma radiation.



To prevent the escape of radiation, what should be used to make the box?

- A glass
  - B lead
  - C plastic
  - D wood
- 38 The carbon in the body of all animals contains some radioactive carbon. At the time when any animal dies, each gram of carbon in its body emits about sixteen  $\beta$ -particles per minute.
- Some animal remains are discovered. It is found that four  $\beta$ -particles are emitted per minute for each gram of carbon in the remains.
- The half-life of radioactive carbon is 6000 years.
- How old are the remains of the animal?
- A 1500 years
  - B 3000 years
  - C 6000 years
  - D 12 000 years
- 39 What does the nucleus of an atom contain?
- A electrons and neutrons
  - B electrons and protons
  - C neutrons and protons
  - D neutrons only
- 40 Two nuclides have the symbols



Which statement is true?

- A A nucleus of F has twice the mass number as a nucleus of K.
- B A nucleus of K has twice as many protons as a nucleus of F.
- C A nucleus of K has twice as many neutrons as a nucleus of F.
- D A nucleus of K has twice as many electrons as a nucleus of F.