ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

PHYSICS 5055/1

PAPER 1 Multiple Choice

NOVEMBER 2016 SESSION 1 hour

Additional materials:
Multiple Choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)
Electronic calculator and/or Mathematical tables

TIME 1 hour

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.

This question paper consists of 16 printed pages.

Copyright: Zimbabwe School Examinations council, N2016.

©ZIMSEC N2016

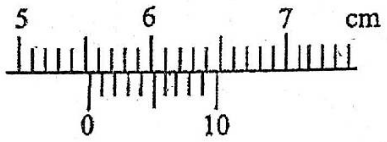
[Turn over

Scanned with CamScanner

1 What instrument is used to measure velocity at an instant?

A speedometer
B odometer
C clock
D c.r.o

2 The diagram shows a measurement on a vernier callipers.



The reading shown is

A 5.55 cm.
B 5.56 cm.
C 5.60 cm.
D 6.00 cm.

3 A uniform metal rod is heated evenly along its length.

Which statement is correct?

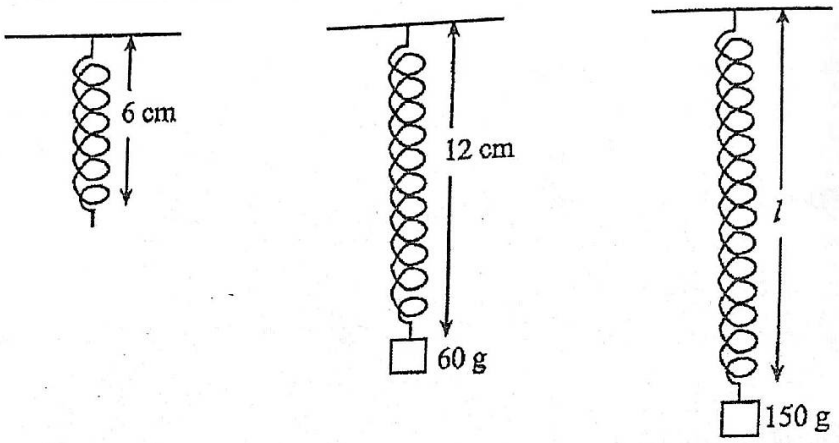
A Its mass decreases.
B Its mass increases.
C Its density decreases.
D Its density increases.

4 The acceleration of an object falling with terminal velocity is

A zero.
B constant.
C decreasing.
D increasing.

Scanned with CamScanner

5 Objects of different masses were hung on a spring as shown.



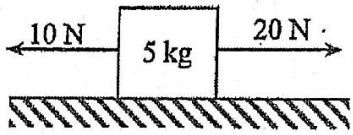
What is the length, *l*, if the spring obeys Hooke's law?

A 15 cm
B 21 cm
C 30 cm
D 36 cm

6 Which statement about the effect of a force on an object is **incorrect**?

A It changes the mass of the object.
B It changes the length of the object.
C It changes the shape of the object.
D It changes the direction of the motion of the object.

7 The diagram shows two forces acting on an object.

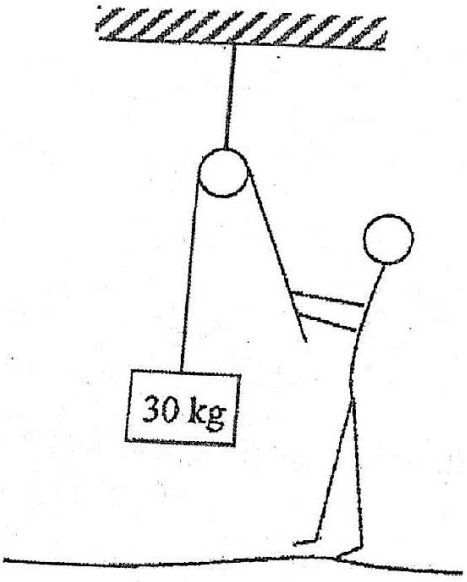


What is true about the motion of the object?

A speed is 2 ms^{-1}
B speed is 4 ms^{-1}
C acceleration is 2 ms^{-2}
D acceleration is 4 ms^{-2}

Scanned with CamScanner

... supports a mass of 30 kg.

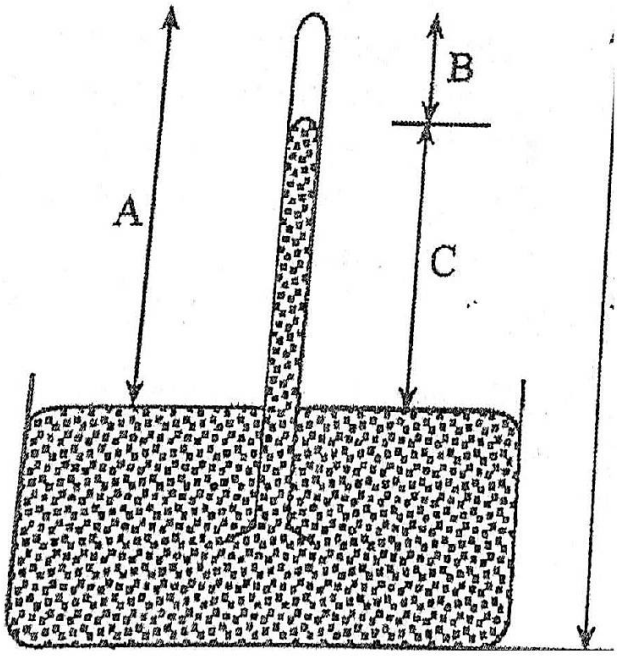


What is the resultant force acting on the mass?

A	0 N
B	10 N
C	30 N
D	300 N

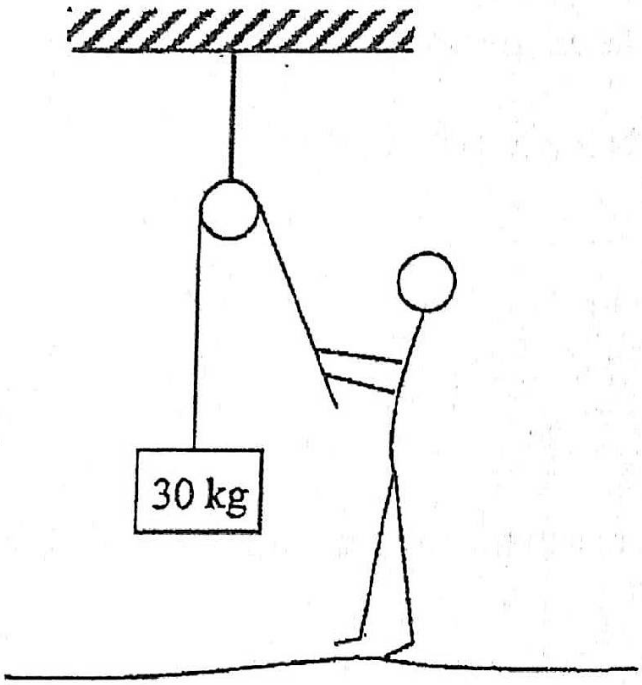
The diagram shows a mercury barometer.

Which length, **A**, **B**, **C** or **D** corresponds to the atmos



Scanned with CamScanner

ɔorts a mass of 30 kg.



nt force acting on the mass?

a mercury barometer.

Scanned with CamScanner

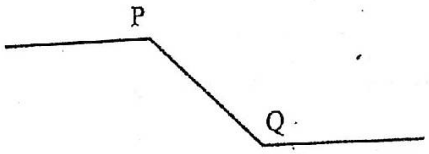
10 In a nuclear power station, 0.25 kg of uranium was all changed into nuclear energy.

What was the amount of energy produced?

[the speed of light is 3.0×10^8 m/s]

A 2.25×10^{18} J
B 2.25×10^{16} J
C 7.50×10^{10} J
D 7.50×10^{7} J

11 A boy slides down a rough plane from a point of rest P to stop at point Q.

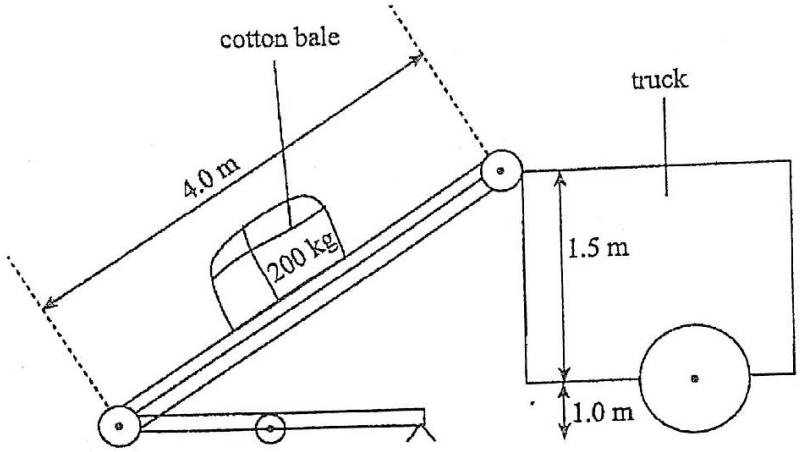


The energy changes for the boy between P and Q are

A potential → heat → kinetic.
B potential → kinetic → heat.
C kinetic → potential → heat.
D kinetic → heat → potential.

Scanned with CamScanner

12 The diagram shows an electrically powered elevator used to lift bales of cotton into a truck. The elevator takes 30 s to lift one bale of mass 200 kg into the truck ($g = 10\ ms^{-2}$).



What is the power developed by the elevator?

A 267 W
B 167 W
C 100 W
D 67 W

13 Which force must be overcomed when ice changes from solid to liquid?

A The force between electrons and nucleus.
B The force between the atoms in a molecule.
C The force between molecules.
D The force of gravity.

14 Which statement about evaporation is true?

A Evaporation takes place only within the liquid.
B Evaporation takes place only at a fixed temperature.
C Evaporation takes place only at the surface.
D Evaporation takes place only at a fixed pressure.

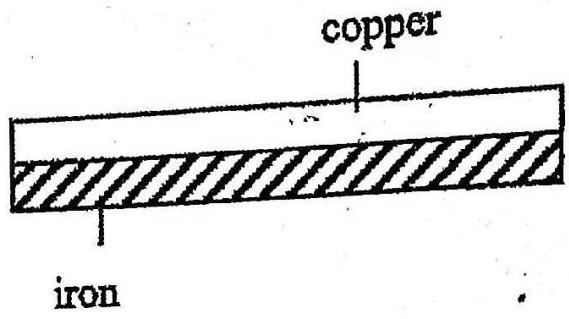
15 Which design features should a clinical thermometer have?

A thick glass bulb and a narrow bore
B thick glass bulb and a wide bore
C thin glass bulb and a narrow bore
D thin glass bulb and a wide bore

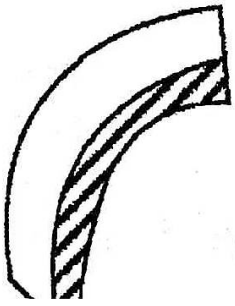
Scanned with CamScanner

is needed to raise the temperature of 5 kg of a substance by 20 °C?
ıpacity of substance is 300 J/kg/°C]

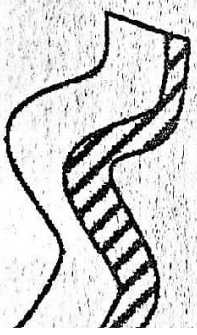
ɔws a bimetallic strip made of copper and iron at 25 °C.



correctly shows the bimetallic strip when placed at a
ıbout – 4 °C, given that copper has a higher rate of thermal expansion than



B



Scanned with CamScanner

18 The speed of a water wave is best described by the distance

A between successive troughs.
B between crest and trough.
C a particle moves up and down in one second.
D a wave front moves in one second.

19 Which row is correct about wave speed and frequency when a wave moves from a deep end to a shallow end?

	wave frequency	wave speed
A	changes	changes
B	changes	unchanged
C	unchanged	changes
D	unchanged	unchanged

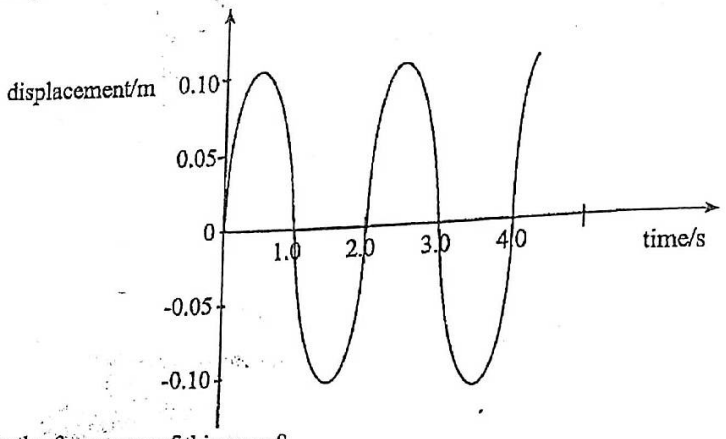
20 A ship transmits ultrasonic waves into the sea of depth 2 500 m and receives an echo 5 seconds later.

What is the speed of ultrasonic sound in water?

A $250\ ms^{-1}$
B $330\ ms^{-1}$
C $500\ ms^{-1}$
D $1000\ ms^{-1}$

Scanned with CamScanner

21 The diagram shows how displacement varies with time as the wave passes a fixed point.

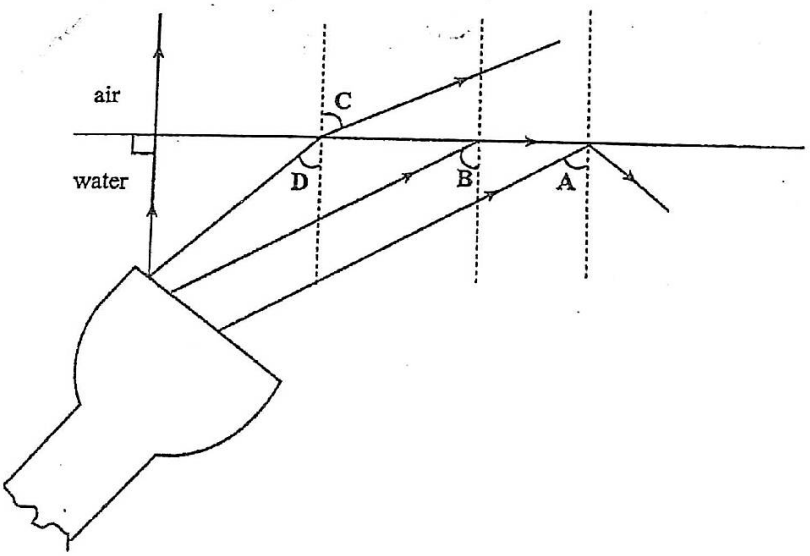


What is the frequency of this wave?

A 0.25 Hz
B 0.50 Hz
C 1.0 Hz
D 2.0 Hz

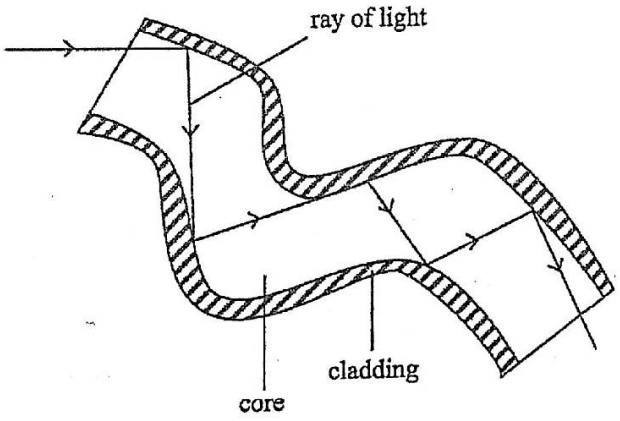
22 The diagram shows four rays of light from a torch below the surface of water.

Which angle, **A**, **B**, **C** or **D**, is the critical angle?



Scanned with CamScanner

23 The diagram shows an optical fibre.



Which statement **best** explains why the ray is trapped in the fibre?

A The refractive index of the core is zero.
B The refractive index of the core equals that of the cladding.
C The refractive index of the core is less than that of the cladding.
D The refractive index of the core is greater than that of the cladding.

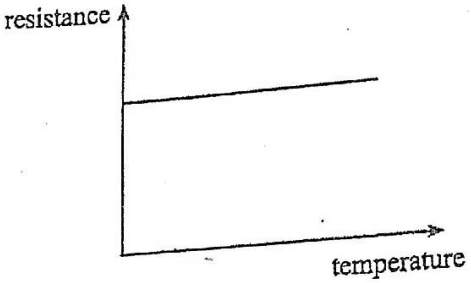
24 An electrical quantity defined as "the energy converted by a source in driving a unit charge round a complete circuit" is the

A current.
B electromotive force.
C potential difference.
D power.

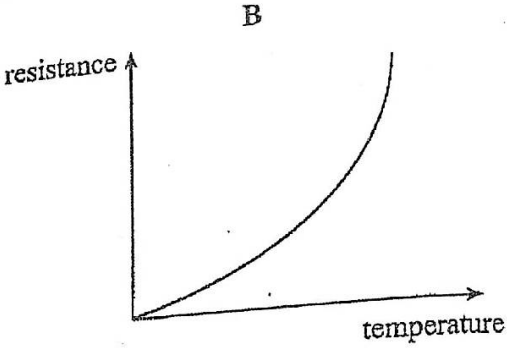
Scanned with CamScanner

25 Which graph shows how the resistance of a thermistor changes with temperature?

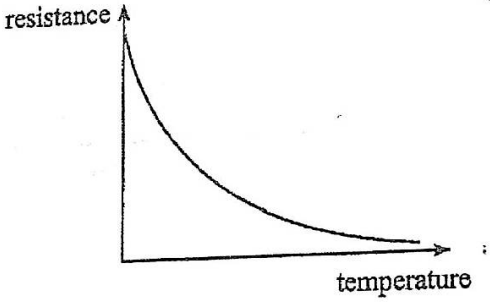
A



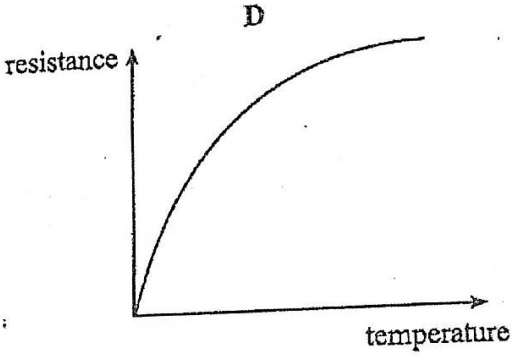
B



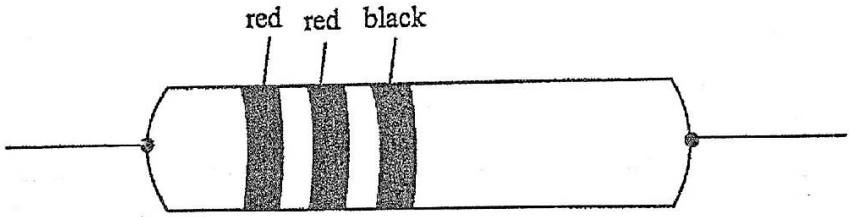
C



D



26 The diagram shows a carbon resistor.



What is the resistance of the resistor?

A 22 Ω
B 220 Ω
C 2 200 Ω
D 22 000 Ω

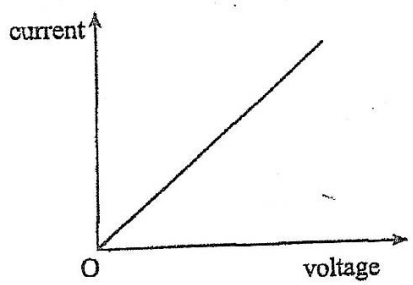
Scanned with CamScanner

27 How much charge flows through a 100 W heater when 10 A is allowed to flow for 5 minutes?

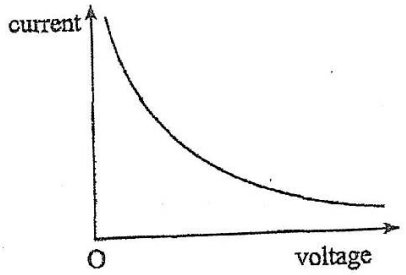
A 0.5 C
B 2 C
C 50 C
D 3 000 C

28 Which graph shows how the current changes when the voltage across an ohmic conductor is varied?

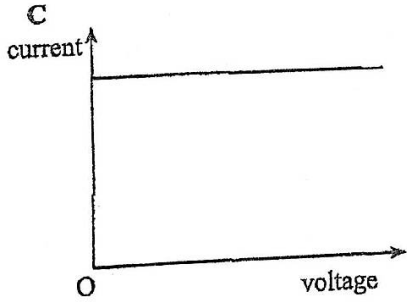
A



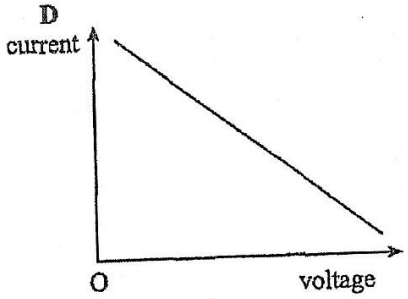
B



C

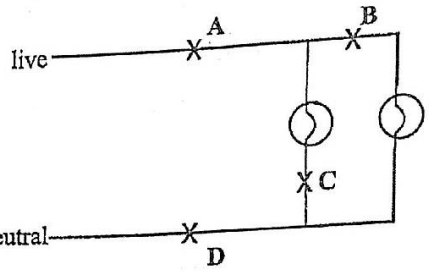


D



Scanned with CamScanner

29 Which is the best switch position in order to turn off both lamps?



30 Which statement about an electrical appliance with double insulation is correct?

A It has no earth wire connected.
B It has an earth wire connected.
C It has a metal casing.
D It has high risk of shock.

31 Overheating in electrical cables can be minimised by using

A thinner cables.
B thicker cables.
C thinner insulation.
D thicker insulation.

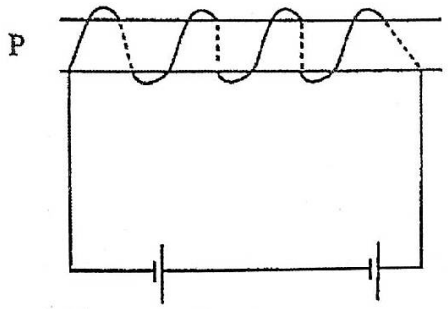
32 An electric heater is rated 3 kW. Electrical energy costs 0.1 c per kWh.

What is the cost of using the heater for 5 hours?

A 0.5 c
B 1.5 c
C 15 c
D 150 c

Scanned with CamScanner

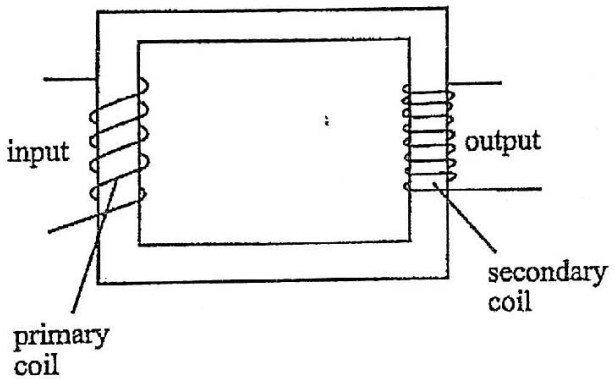
33 The diagram shows a solenoid connected to a constant d.c supply.



Which statement about end P is correct?

A It is positive.
B It is negative.
C End P is the north pole.
D End P is the south pole.

34 The diagram shows a transformer.



Which statement, about the transformer, is correct?

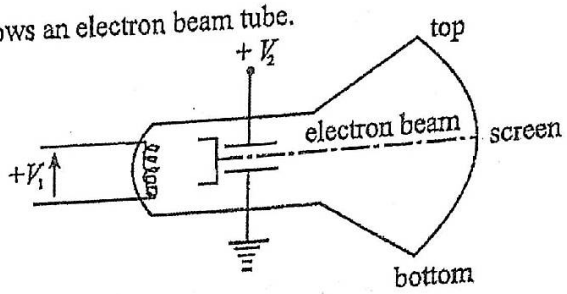
A The input is direct current.
B The input current is greater than the output current.
C The input current is less than the output current.
D The input current is the same as the output current.

35 Which particle does **not** experience a force in an electric field?

A neutron
B proton
C electron
D alpha particle

Scanned with CamScanner

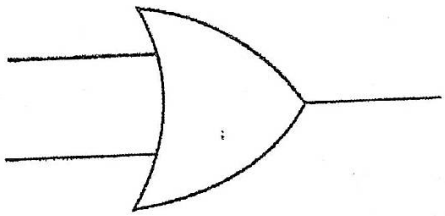
36 The diagram shows an electron beam tube.



Which change in voltage results in the position of the spot on the screen moving towards the top?

A decreasing V_1
B decreasing V_2
C increasing V_1
D increasing V_2

37 The diagram shows a logic gate.



The logic gate is

A OR.
B NOR.
C NAND.
D AND.

38 The radioactive nucleus, $^{226}_{88}Ra$, decays with the emission of a β particle.

How many protons and neutrons are left in the nucleus?

	protons	neutrons
A	88	137
B	88	138
C	89	137
D	89	226

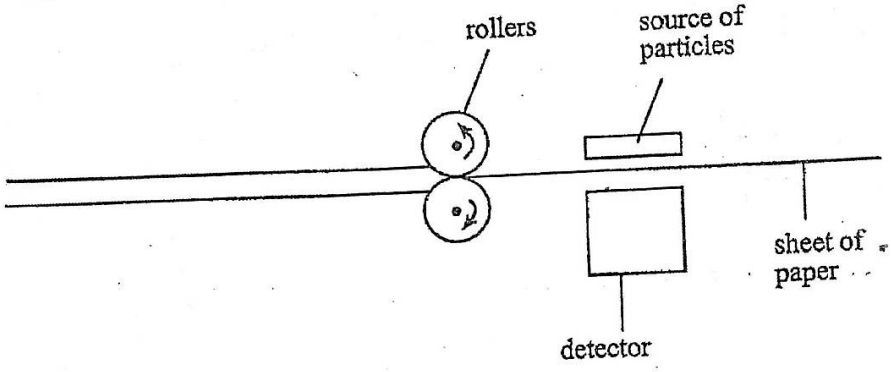
[Turn over

Scanned with CamScanner

39 The count-rate from a radioactive source of half-life 1.0 minutes falls from 400 to 50 in

A $\frac{1}{3}$ minutes.
B 1 minute.
C 3 minutes.
D 8 minutes.

40 The diagram shows apparatus to determine the thickness of paper.



A source of alpha-particles is **not** suitable because alpha particles

A are all stopped by the paper.
B are too dangerous to those working nearby.
C have a short half-life.
D make the paper radioactive.

Scanned with CamScanner