ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

PHYSICS 4023/1

PAPER 1 Multiple Choice

NOVEMBER 2019 SESSION 1 hour

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

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 18 printed pages and 2 blank pages.

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1. Which one has the same unit as moment of a force?

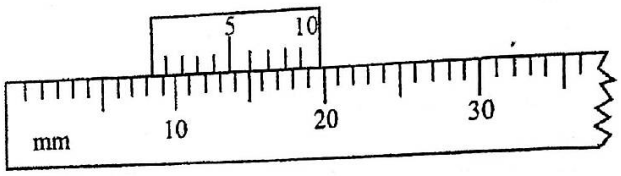
A force

B momentum

C power

D work

2. What is the reading shown on the vernier callipers?



A 8.4 mm

B 8.6 mm

C 14.5 mm

D 15.0 mm

3. What is the density of a piece of metal which has a mass of 450 g and a volume of 48 cm^3?

A 0.1 g/cm^3

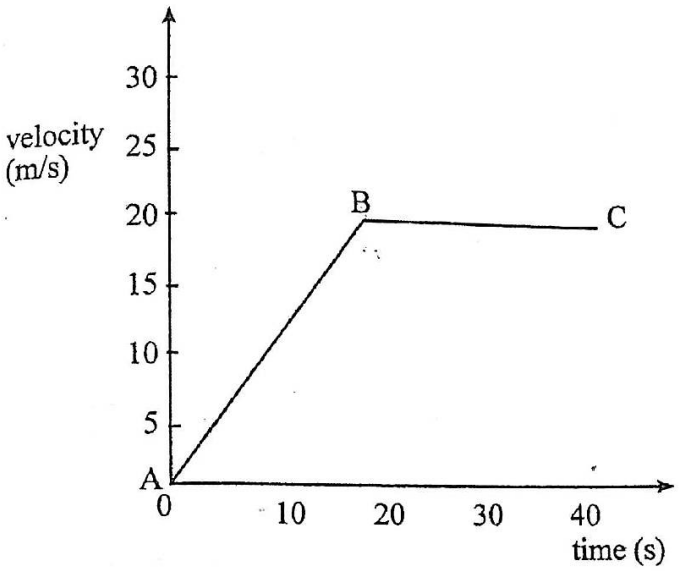
B 9.4 g/cm^3

C 402 g/cm^3

D 21 600 g/cm^3

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4. The graph shows the motion of a car from point A to C.



Which row best describes the motion of the car?

	A-B	B-C
A	uniform acceleration	uniform velocity
B	change in acceleration	uniform acceleration
C	uniform velocity	uniform acceleration
D	change in velocity	uniform acceleration

5. Which statement is correct for a rock falling freely?

A Acceleration is constant.

B Acceleration increases.

C Acceleration decreases.

D Acceleration is zero.

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6. Which changes result in an increase in the stability of an object?

A increased base area and increased height of centre of gravity

B decreased base area and increased height of centre of gravity

C increased base area and decreased height of centre of gravity

D decreased base area and decreased height of centre of gravity

7. Inertia is

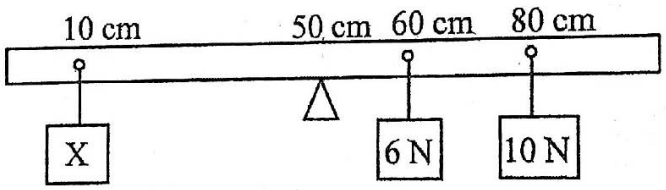
A resistance to change of state of motion.

B pressure due to change of motion.

C a force which opposes motion.

D a force which causes motion.

8. The diagram shows a uniform metre rule in equilibrium.



What is the value of X?

A 8 N

B 9 N

C 16 N

D 60 N

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9. Which statement is correct for a body moving in a circle at constant speed?

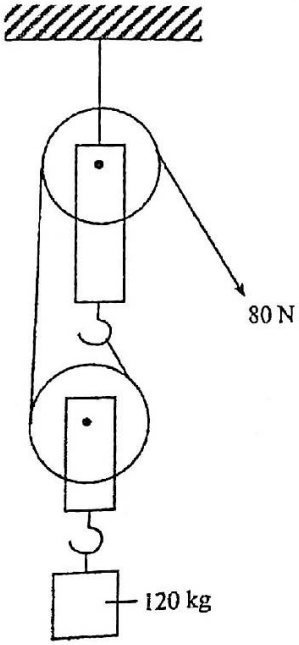
A There is no force acting on it.

B There is no force producing an acceleration.

C There is a force acting at a tangent to the circle.

D There is a force acting towards the centre of the circle.

10. The diagram shows a pulley system.



What is the mechanical advantage of the pulley system?

A 0.067

B 0.670

C 1.50

D 15.00

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11. Which quantity is calculated by multiplying force and distance?

A work

B power

C pressure

D momentum

12. Gravitational potential energy is transformed to kinetic energy when

A a car is travelling on a flat horizontal ground.

B a mango falls from a mango tree.

C a car is travelling up a hill.

D an object is thrown upwards.

13. One watt is equivalent to one

A volt per second.

B joule per second.

C coulomb per second.

D ampere per second.

14. Which source of energy is renewable?

A coal

B tides

C generators

D batteries

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15. Which factor affects the strength of joints?

A size of load

B size of contact area

C size of materials

D size of dowels

16. What causes the production of soot in a petrol engine?

A blocked jets

B worn-out jets

C worn out radiator

D blocked petrol filter

17. A compressional force is a

A rotational force.

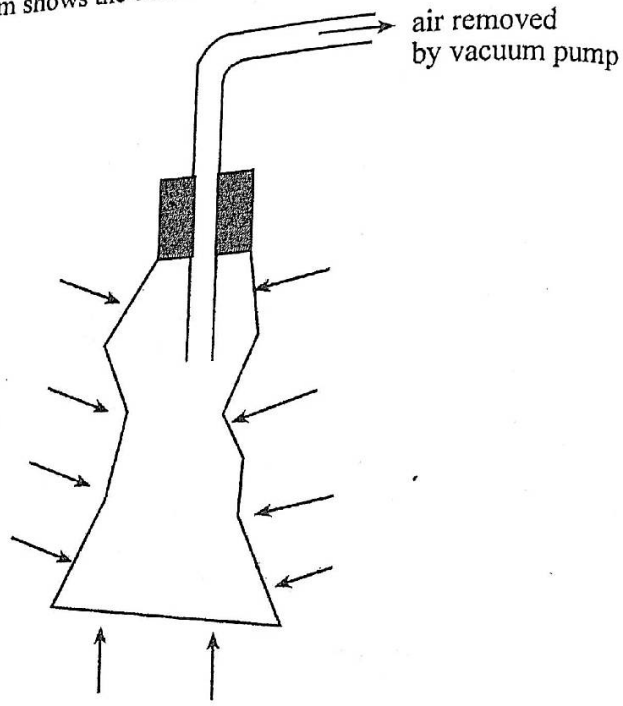
B stretching force.

C crushing force.

D twisting force.

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18. The diagram shows the effect of removing air from a can.



Why does the can crush?

A The pressure inside the can is greater than outside pressure.

B The pressure inside the can is equal to outside pressure.

C The pressure inside the can is less than outside pressure.

D The pressure inside the pump is equal to the outside pressure.

19. Which row shows what happens to the melting point of ice and the boiling point of water when the pressure is reduced?

	melting point	**boiling point**
A	increases	increases
B	increases	decreases
C	decreases	decreases
D	decreases	increases

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20. Which statement best explains why water is **not** used in thermometers?

A It adheres to glass.

B It has a low heat capacity.

C It does not expand when heated.

D It has unusual behaviour.

21. What happens to the temperature of a substance during change of state?

A it increases

B it decreases

C it remains constant

D it fluctuates

22. What increases the loudness of a sound note?

A increase in frequency

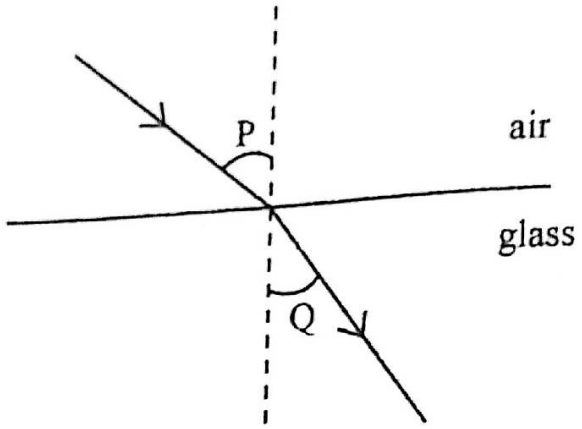
B decrease in frequency

C decrease in amplitude

D increase in amplitude

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23. The diagram shows a ray of light travelling from air to glass.



Which ratio represents the refractive index of glass?

A $\frac{P}{Q}$

B $\frac{Q}{P}$

C $\frac{Sin\ P}{Sin\ Q}$

D $\frac{Sin\ Q}{Sin\ P}$

24. Which electromagnetic wave is used in data communication?

A X-rays

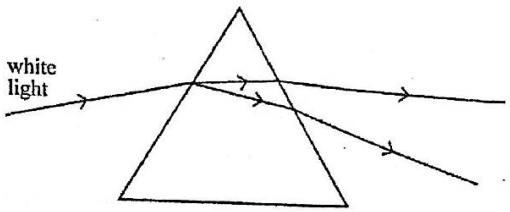
B infra-red

C ultra-violet

D microwave

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25. The diagram shows a ray of white light passing through a glass prism.



Which component of the light is refracted the most?

A violet

B green

C blue

D red

26. The depolariser used in a dry cell is

A ammonium (II) chloride.

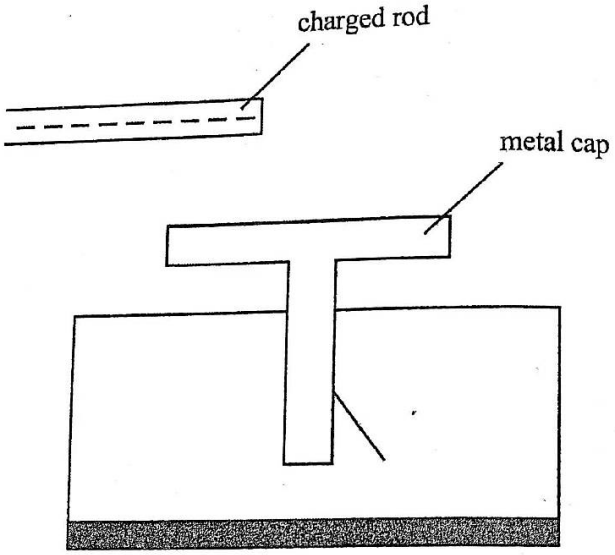
B manganese (IV) oxide.

C zinc (II) sulphate.

D zinc (II) chloride.

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27. The diagram shows a charged rod brought close to a gold leaf electroscope.



The leaf diverges because

A negative charges move from the charged rod to the gold leaf.

B negative charges are repelled from the metal cap to the gold leaf.

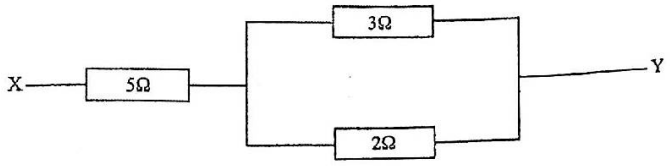
C positive charges are attracted from the gold leaf to the metal cap.

D positive charges are attracted from the gold leaf to the charged rod.

28.

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28. The diagram shows a network of resistors.



What is the effective resistance across XY?

A 5.2 Ω

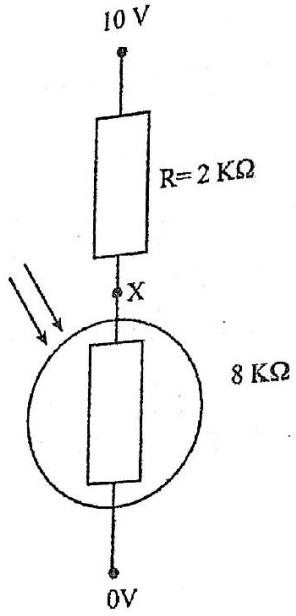
B 5.8 Ω

C 6.2 Ω

D 10.0 Ω

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29. The diagram shows a potential divider circuit consisting of an LDR and a fixed resistor, R.



What is the potential at X?

A 2.0 V

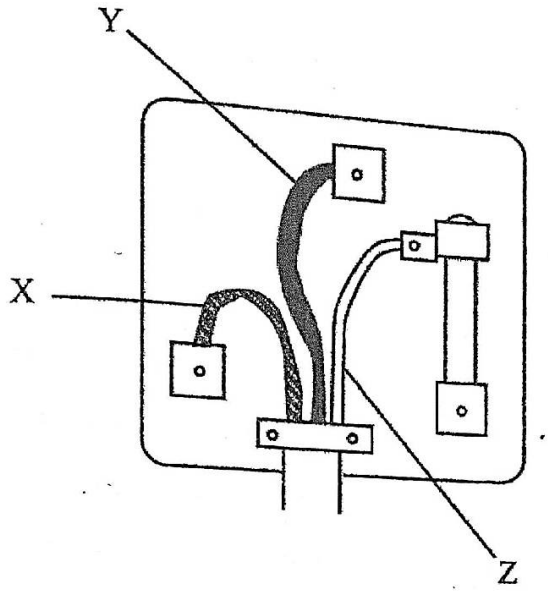
B 2.5 V

C 5.0 V

D 8.0 V

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30. The diagram shows a three-pin plug.



Which combination correctly identifies wires X, Y and Z?

	X	Y	Z
A	live	neutral	earth
B	neutral	earth	live
C	neutral	live	earth
D	live	earth	neutral

31. Which one **cannot** be used for demagnetisation?

A heating

B hammering

C direct current

D alternating current

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32. Alternating current generators are different from direct current generators because they have

A carbon brushes.

B split rings.

C commutators.

D slip rings.

33. Lenz's law states that

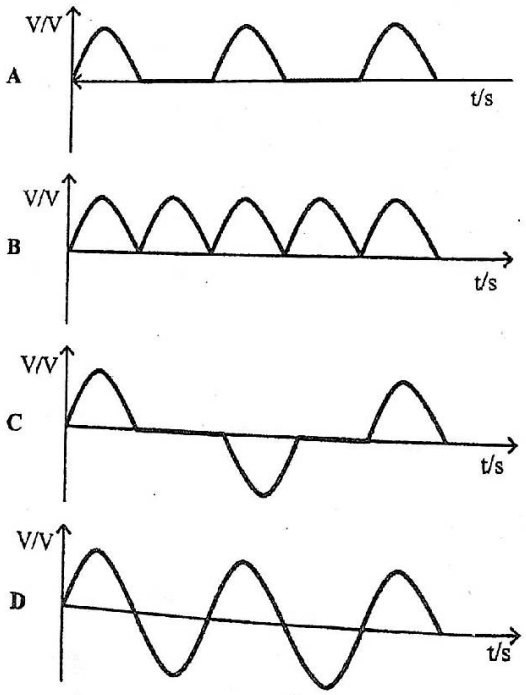
A current is proportional to voltage provided temperature remains constant.

B direction of induced emf is such as to oppose the effect causing it.

C induced emf is directly proportional to the rate of change of magnetic flux.

D energy is neither created nor destroyed but changed from one form to another.

34. Which diagram shows the variation of a.c voltage with time after a full-wave rectification process?



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35. A transformer with an input voltage of 2 400 V and an output voltage of 240 V has 2 000 turns on the primary coil.
What is the number of turns on the secondary coil?

A 10

B 200

C 2 160

D 20 000

36. What name is given to the process of directing electrons into a fine beam in the cathode ray oscilloscope?

A emission

B acceleration

C collimation

D deflection

37. The table shows a truth table for a logic gate.

INPUTS		OUTPUT
0	0	0
1	0	1
0	1	1
1	1	1

Which logic gate is represented by the truth table?

A OR

B AND

C NOR

D NAND

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38. Which electrical component uses a low-current circuit to switch a high current circuit on or off?

A relay

B diode

C thermistor

D capacitor

39. Isotopes of the same element contain the same number of

A electrons.

B electrons and neutrons.

C neutrons and protons.

D neutrons.

40. What is the half-life of a radioactive source whose count rate falls from 4 000 to 500 in 30 minutes?

A 3.75 minutes

B 7.5 minutes

C 10 minutes

D 15 minutes

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