For Performance Measurement

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

PHYSICS 4023/1

PAPER 1 Multiple Choice

SPECIMEN PAPER 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.

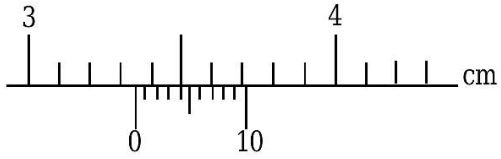
This specimen paper consists of 16 printed pages.

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1 Which of the quantities is a base quantity?

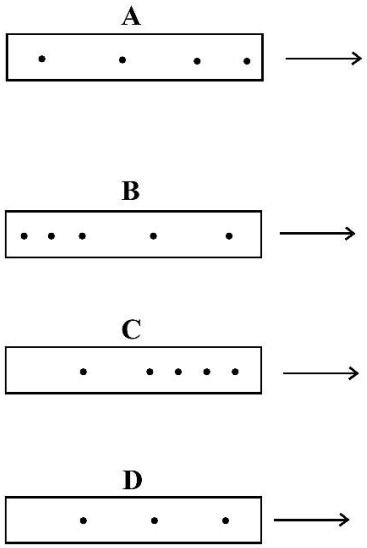
A energy
B force
C time
D volume

2 What is the reading shown on the vernier scale?



A 3.34cm
B 3.42cm
C 3.70cm
D 3.73cm

3 The diagrams show different sections of a ticker tape being pulled from left to right by a trolley.



Which section **A**, **B**, **C** or **D** shows the decreasing speed of the trolley?

4 Which statement is true about two objects of different masses in free fall near the earth's surface?

A greater acceleration for the bigger object
B greater acceleration for the smaller object
C less acceleration for the mass with less speed
D same acceleration for both masses

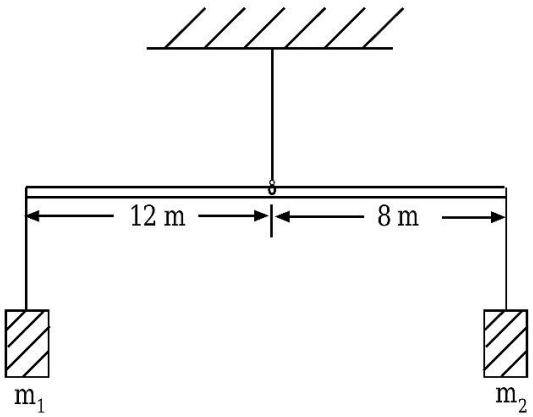
5 A load of 50 N is added to a steel spring of length 10 cm, its length increases to 17 cm, What is the spring constant?

A 0.14 N/cm
B 2.94 N/cm
C 5.00 N/cm
D 7.14 N/cm

6 Which of the following can **not** be changed by a force?

A acceleration
B mass
C momentum
D volume

7 The diagram shows a system in equilibrium. What is the mass ratio $\frac{M2}{M1}$?



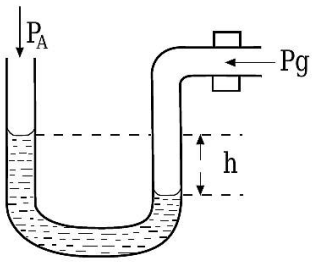
A $\frac{2}{3}$

B $^{3}/_{2}$

C $^{1}/_{2}$

D $\frac{2}{1}$

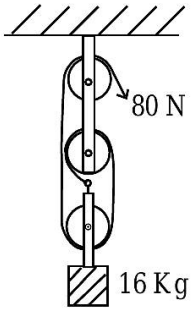
8 The diagram shows a U-tube manometer.



What is the formula for calculating gas pressure?

A pgh
B h + pgh
C P_A + hpg
D pgh − h

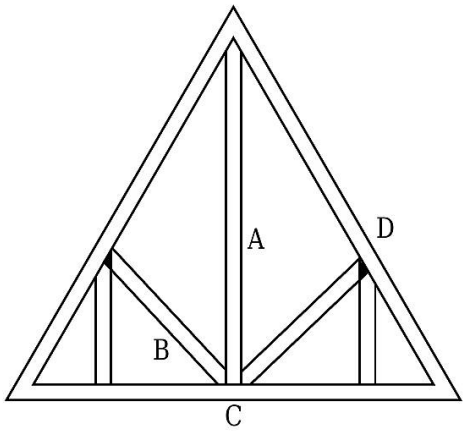
9 The diagram shows a pulley system.



What is the V.R?

A 1.6
B 2.0
C 3.0
D 5.0

10 The diagram below shows a truss.



Which part **A**, **B**, **C** or **D** shows where compressional forces are acting?

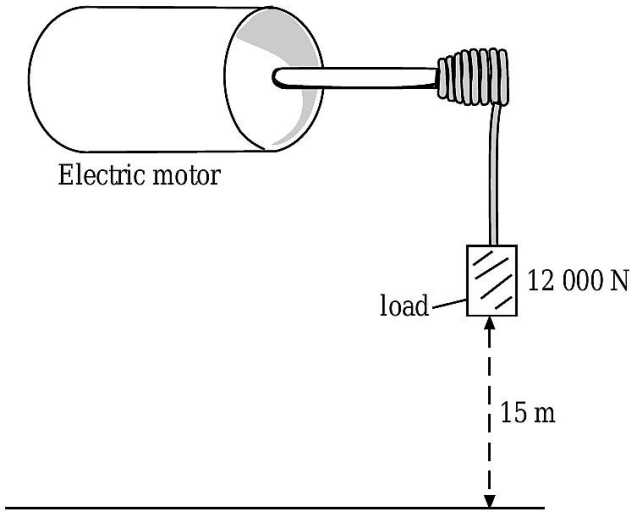
11 Which is the best method of joining steel blocks together?

A brazing
B glueing
C soldering
D welding

12 Bricks are used in construction because they

A resist compressional forces.
B resist tensile forces.
C resist shear forces.
D resist heat.

13 The diagram shows an electric motor supporting a load of 12 000N at a height of 15m.



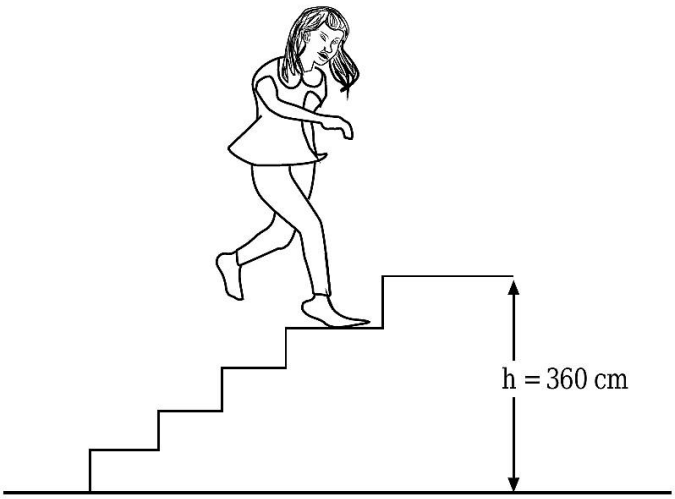
What is the work done by the electric motor?

A 0 J
B 800J
C 12 000J
D 180 000J

14 Which of the following energy conversion takes place in an electric bulb when it is operating?

A light to heat.
B heat to light.
C chemical to light.
D electrical to heat.

15 The diagram shows a girl of weight 400N running up the stairs of total height of 360cm.



What is the workdone by the girl?

A 144 000 J
B 14 400 J
C 1 440 J
D 144 J

16 Why do temperatures of the sea rise and fall very slowly compared to that of the land?

A Water absorbs large amount of heat for a very small temperature rise.
B Land absorbs large amount of heat for a very small temperature rise.
C Sea surface is bigger than land surface.
D Land surface is bigger than sea surface.

17 In good conductors of heat, thermal energy is transferred by

A density changes only.
B particle vibration only.
C density change and electron diffusion.
D particle vibration and electron diffusion.

18 Oil is used in car engines because

A it increases the efficiency of the engine.
B it cools the engine.
C it is used as a fuel.
D it cleans the engine.

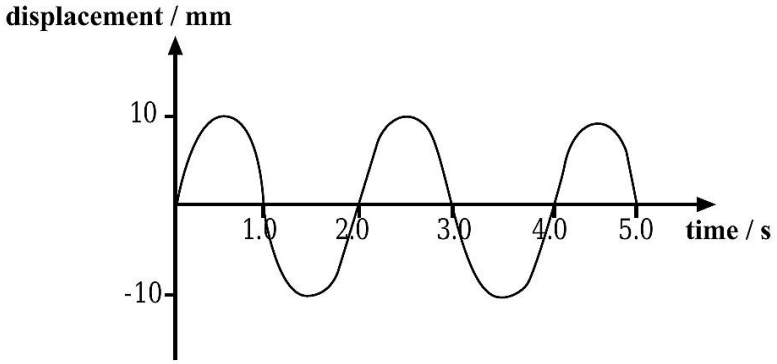
19 A petrol filter is used for

A storing petrol.
B cleaning the petrol.
C spraying petrol into the carburetor.
D controlling amount of petrol into the carburetor.

20 Light waves in glass have a wavelength of 6.0×10^{-7}m and a speed of 2.0×10^{8}ms^{-1}. They enter into water and their speed becomes 2.3×10^{8}ms^{-1}. What is the wavelength of the waves in water?

A 6.9×10^{-7}m
B 5.2×10^{-7}m
C 1.9×10^{6}m
D 1.4×10^{6}m

21 The diagram shows the variation of displacement of a wave with time.



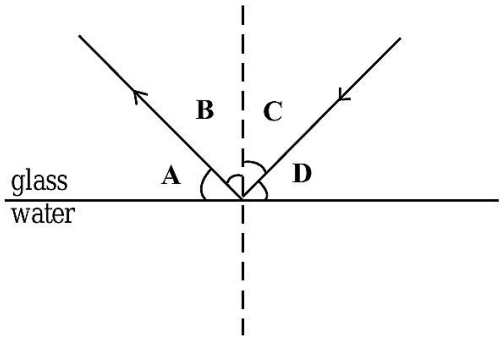
What is the frequency of the wave?

A 2.0 Hz
B 1.0 Hz
C 0.5 Hz
D 0.02 Hz

22 Loudness of sound is related to

A amplitude.
B frequency.
C speed.
D wavelength.

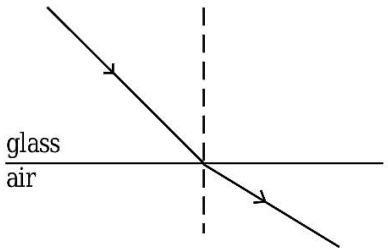
23 The diagram shows a light ray incident on a glass-water boundary.



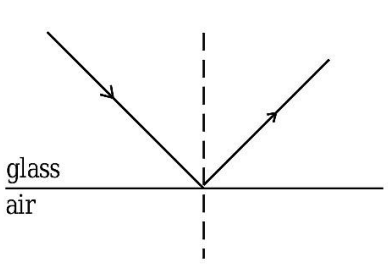
Which letter **A**, **B**, **C** or **D** represents the angle of reflection?

24 Which diagram shows a light ray incident on a glass-air boundary at an angle of incidence greater than the critical angle?

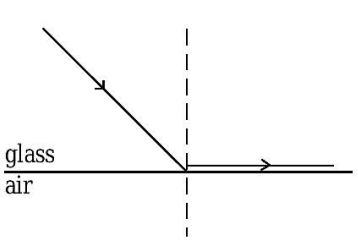
A



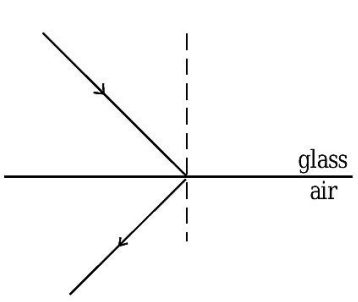
B



C



D



25 What is the nature of an image formed by a diverging lens?

A magnified, real
B magnified, virtual
C diminished, real
D diminished, virtual

26 A neutral atom contain equal number of

A neutrons and electrons.
B neutrons and protons.
C protons and electrons.
D electrons and nucleons.

27 Which combination results in the resistance of a wire being doubled?

	Cross-sectional area	length
A	double	double
B	double	no change
C	halve	halve
D	halve	no change

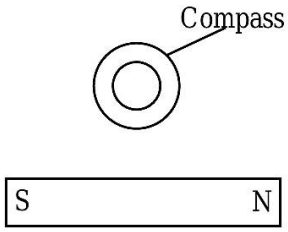
28 An electric kettle is rated 240V, 10A. How much will it cost to run it for an hour at 10cents per unit?

A 24 c
B 240 c
C 2 400 c
D 24 000 c

29 Which pair of metals will be picked up by an electromagnet?

A aluminium and brass
B brass and copper
C copper and iron
D nickel and cobalt

30 A compass is placed beside a bar magnet as shown.



In which direction will the compass needle point?

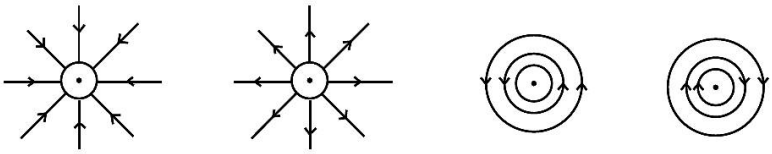
A 

B 

C 

D 

31 Which diagram shows field lines for a current carrying conductor with current coming out of the paper?



A **B** **C** **D**

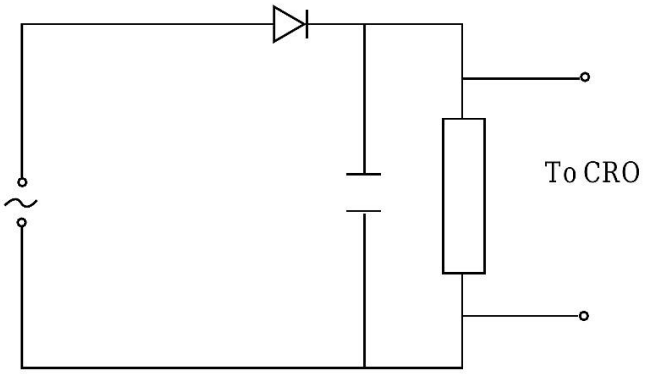
32 Which is **not** a factor affecting magnitude of induced emf?

A amount of current flowing
B number of turns on the coil
C speed of magnet
D strength of magnet

33 The advantage of alternating current over direct current is that it

A can be used for industrial purposes.
B is used by most electronic components.
C can be easily stepped up or down.
D has more power.

34 The diagram shows an electronic circuit.

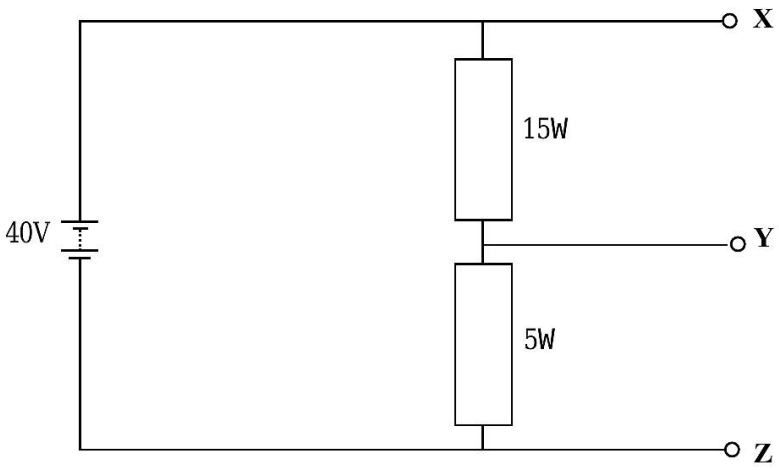


The circuit is used in

A full wave rectification only.
B half wave rectification only.
C full wave rectification and smoothing.
D half wave rectification and smoothing.

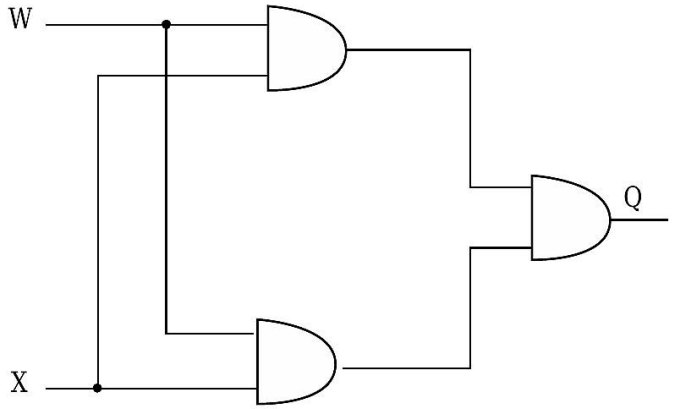
35 The diagram shows the potential divider circuit.

What is the potential difference across **XY**?



A 5V
B 10V
C 15V
D 30V

36 The diagram shows a logic circuit.



Which of the outputs **A**, **B**, **C** or **D** is the correct output for the circuit?

INPUTS		**OUTPUTS**			
X	W	**A**	**B**	**C**	**D**
0	0	0	0	0	1
0	1	0	1	1	0
1	0	0	1	1	0
1	1	1	1	0	0

37 Which pair of nuclides are isotopes?

A $^{59}_{24}X$ and $^{58}_{25}Y$

B $^{59}_{24}X$ and $^{59}_{23}Y$

C $^{57}_{24}X$ and $^{59}_{26}Y$

D $^{58}_{23}X$ and $^{56}_{23}Y$

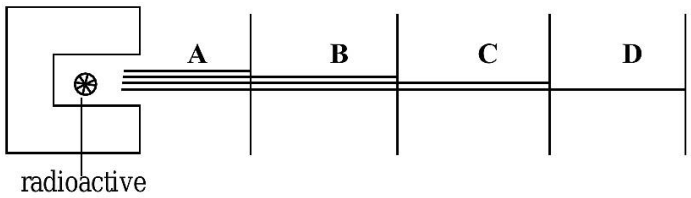
38 Which type of radiation is a fast moving electron?

A alpha.
B beta.
C gamma.
D x-rays.

39 The most dangerous radiation once inside the human body is

A alpha.
B beta.
C gamma.
D x-rays.

40 The diagram shows radiation from a source passing through different materials.



Which radiation **A**, **B**, **C** or **D** shows gamma radiation?