

MINISTRY OF EDUCATION AND HIGHER EDUCATION

GRADE 12 EXAMS, 2008

PHYSICS



P/LAND NATIONAL EXAMINATION BOARD



Name

School

Roll Number.....

Puntland State of Somalia

Ministry of Education

Puntland National Examination Board

Form 4

PHYSICS Examination

2008

Time 2 hours

Plus 10 minutes before the exam for reading through the paper

TOTAL TIME 2 hours 10 minutes

INSTRUCTIONS TO CANDIDATES

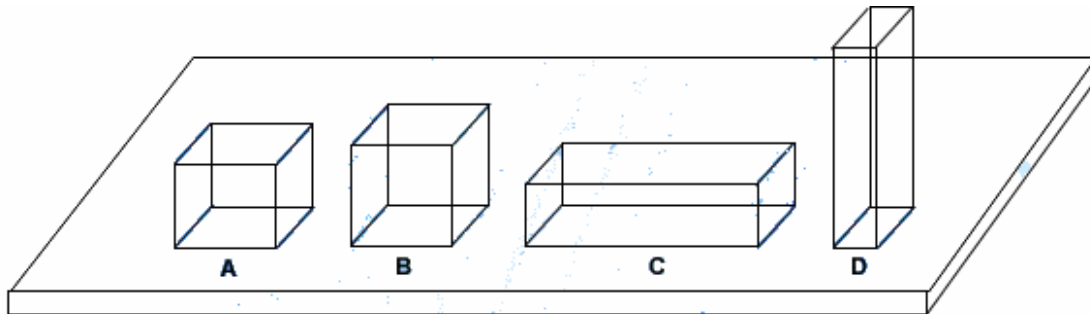
This paper consists of 14 printed pages.
Count them now. Inform the invigilator if there are any missing.

PART ONE (10 Multiple choice questions):	10 marks
PART TWO (8 Structured questions):	90 marks
TOTAL	100 marks

- Answer ALL questions.
- All answers and working must be written on this paper in the spaces provided immediately after each question.
- Rough work can be done on page 2. This will not be marked
- No extra paper is allowed.
- No calculators are allowed.
- If you make a mistake cross out the incorrect answer clearly and write your correct answer.

PART 1: Multiple choice questions. Answer all the questions. Circle the correct answer.

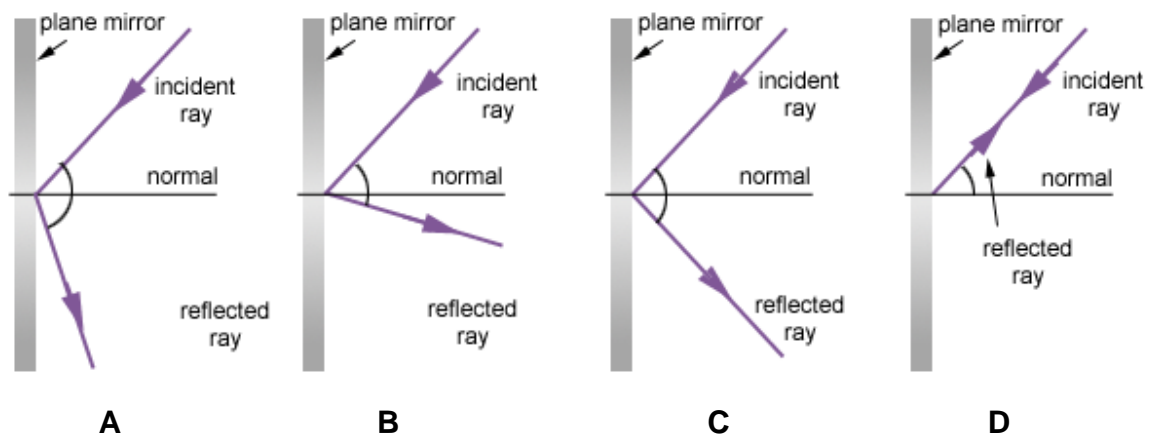
1. Which of the following produces the greatest pressure on the bench?



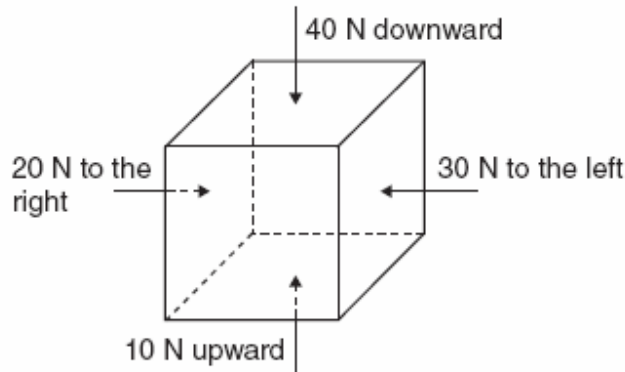
2. What is the boiling point of water at standard pressure on the Kelvin Scale?

- A) 272 K
- B) 273 K
- C) 372 K
- D) 373 K

3. Which of the following correctly shows the path of light striking a plane mirror?



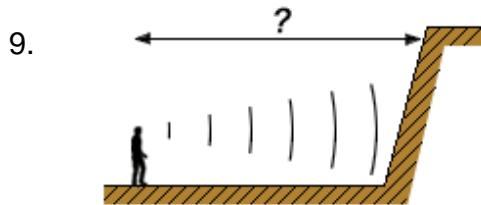
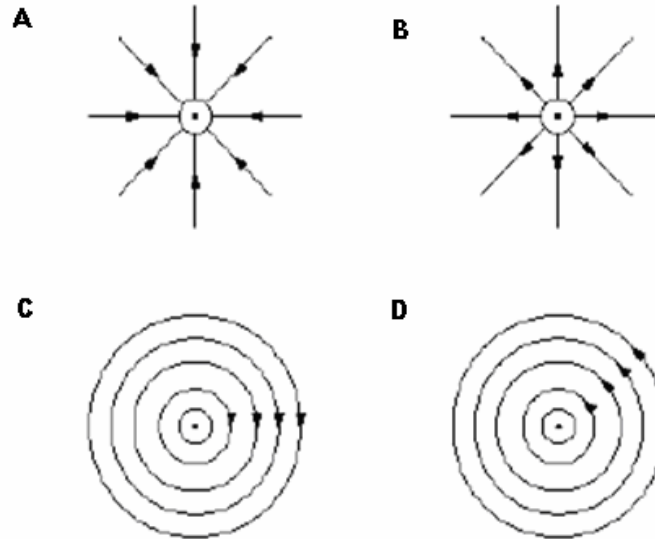
4. Four forces are acting on a box as shown below.



This box will increase in speed

- A) downward and to the left
 - B) downward and to the right
 - C) upward and to the left
 - D) upward and to the right
5. The average speed of a car is 35 km / hr. How far can it travel in 45 minutes?
- A) 0.78 km
 - B) 129 km
 - C) 26.25 km
 - D) 467 km
6. When a spring is compressed, what form of energy does it possess?
- A) Potential
 - B) Kinetic
 - C) Heat
 - D) Sound
7. The amount of work done against friction to slide a box in a straight line across a uniform, horizontal floor depends most on the
- A) time taken to move the box
 - B) distance the box is moved
 - C) speed of the box
 - D) direction of the box's motion

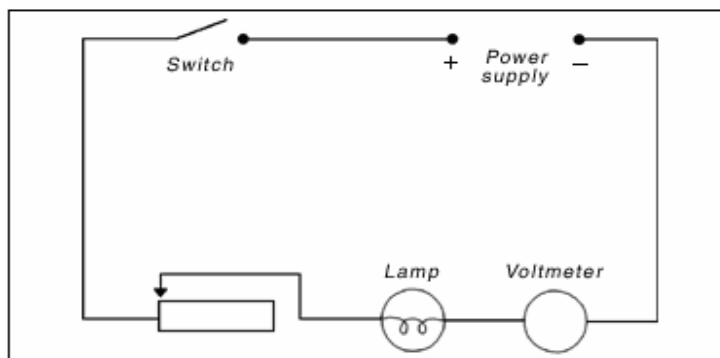
8. Which of the following diagrams best illustrates the magnetic field near a wire that carries an electric current out of the plane of the paper?



Abdihakim stands some distance from a cliff. He gives a shout and hears his echo 4 s later. If the speed of sound in air is 330 m / s, how far is he from the cliff?

- A) 1320 m B) 660 m
C) 330 m D) 82.5 m

10.



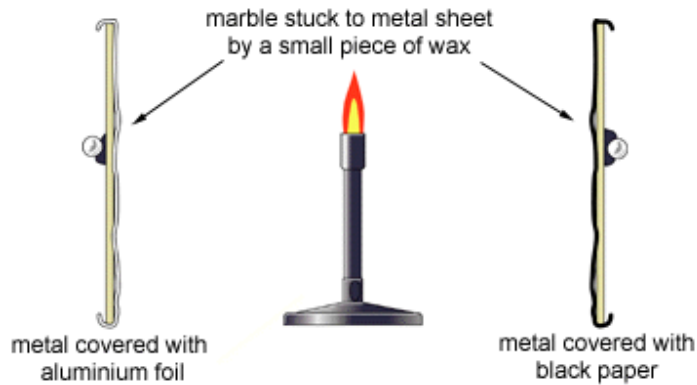
Shukri connected the above circuit. What error did she make?

- A) Voltmeter is wrongly connected B). Supply voltage is too high
C) Switch is in the wrong position D). Switch is defective

PART TWO: ANSWER ALL QUESTIONS (90 marks)

QUESTION ONE (11 marks)

a) A laboratory experiment was set up as follows by Omar Samantar secondary school students.



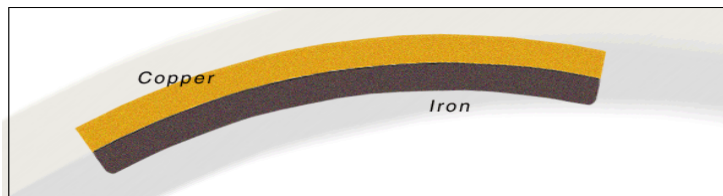
i) What property of heat were the students investigating? (2 marks)
.....
.....

ii) Give one possible conclusion from the experiment. (2 marks)
.....
.....

b) Explain the following observations.

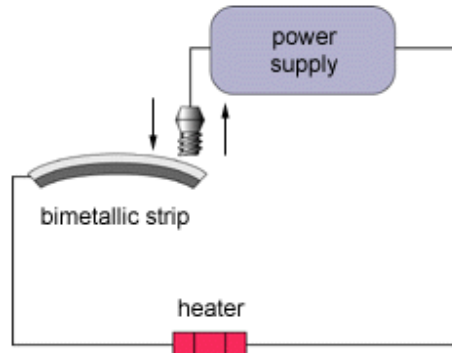
i) A metal bar expands when heated (2 marks)
.....
.....

ii) A bimetal strip bends when heated. (2 marks)



.....
.....

c)



Briefly explain how the above heater works

(3 marks)

.....

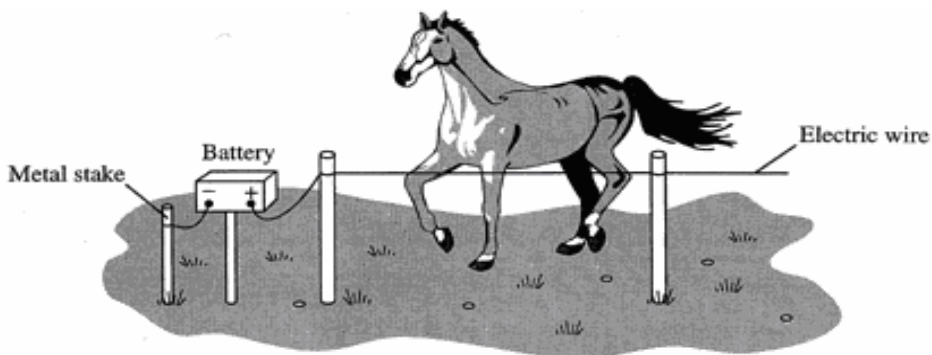
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QUESTION TWO (10 marks)

a) The diagram below shows an electric fence, designed to keep animals in a field in Qardo.



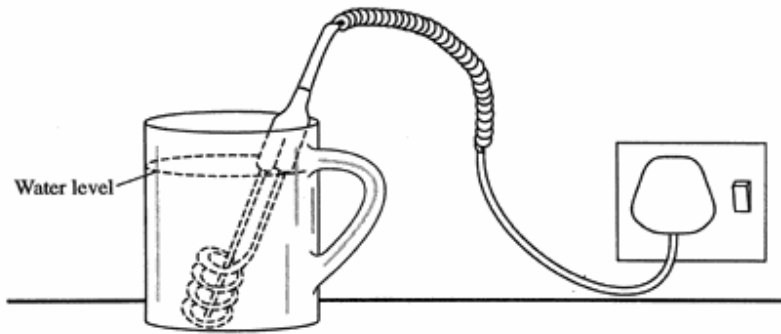
When a horse touches the wire the horse receives a mild shock. Explain how. (3 marks)

.....

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b) When the immersion heater is used correctly, the heating element is at the bottom of the mug. Describe how the water at the top of the mug becomes hot.



(3 marks)

.....

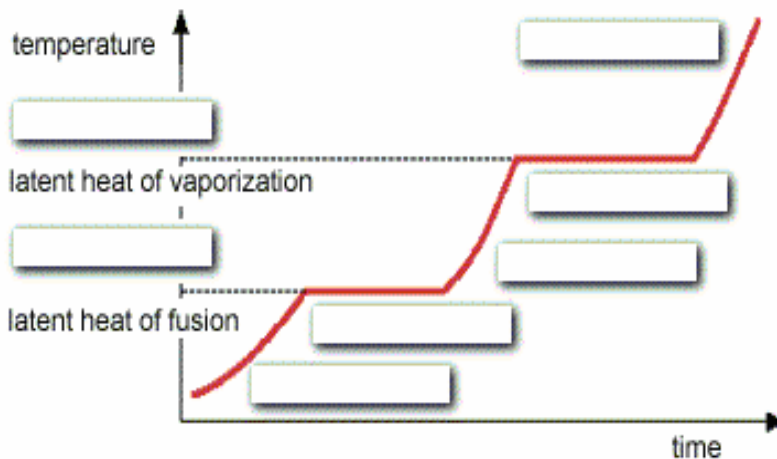
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c) The graph below represents a heating curve. Label the diagram using the following words. Use only letters on the graph.

Gas (A), Boiling point (B), melting point (C), liquid + gas (D),
solid + liquid (E), solid (F), liquid (G)



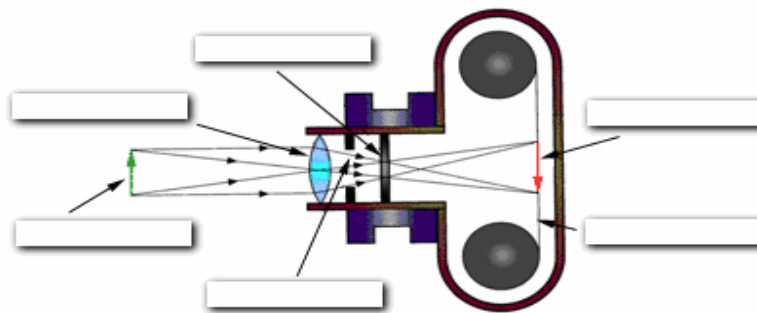
(4 marks)

QUESTION THREE (11 marks)

a) A Garowe photographer bought a camera. The diagram below shows the operation of the camera. Use the following words to label the parts shown. Use the given letters.

Shutter (A), Object(B), Lens(C), Film (D), Aperture(E), Inverted image(F)

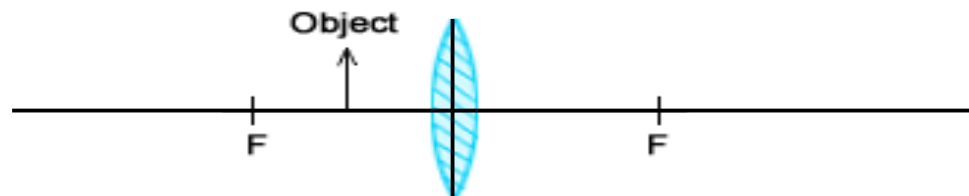
(3 marks)



b) Give two characteristics of the image formed. (2 marks)

.....
.....

c) The figure below shows a small object in front of a convex lens. By means of a suitable ray diagram, locate the position of the image. (3marks)

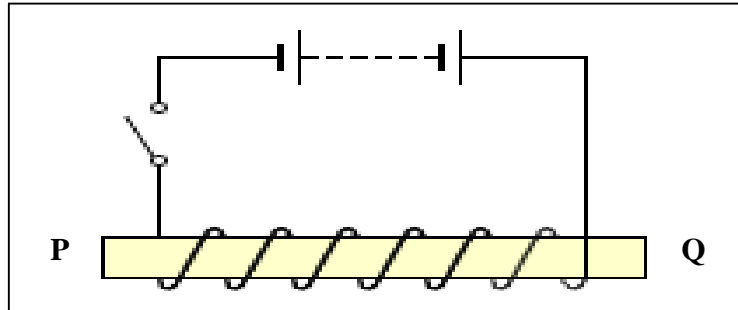


d) List three characteristics of the image formed. (3marks)

- i).....
- ii)
- iii)

QUESTION FOUR (8 Marks)

The figure below shows a steel rod placed inside a solenoid in which current is flowing.

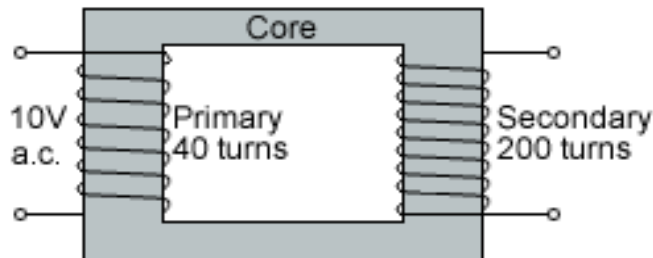


a) Indicate the direction of the current and the polarity of the marked ends P and Q. (2 marks)

b) Give a reason why soft iron is preferred to steel in an electromagnet.

.....
.....(2 marks)

c) State three factors affecting the strength of an electromagnet.



d) For the above transformer, find:

i) the ratio of turns

.....
.....
..... (2 marks)

ii) the output voltage.

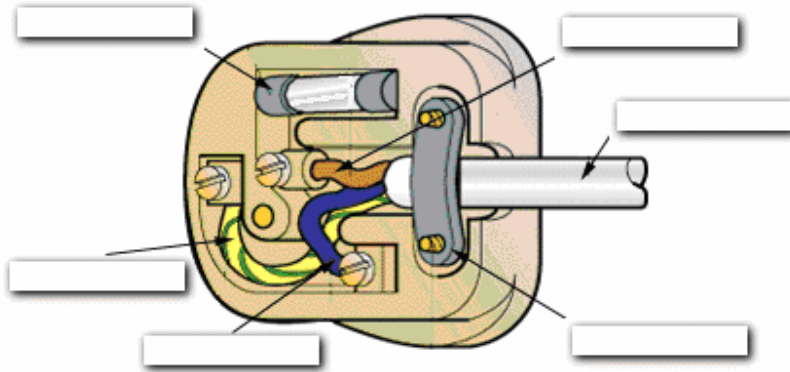
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..... (2 marks)

QUESTION FIVE (12 marks)

The diagram below shows the wiring of an electrical device.

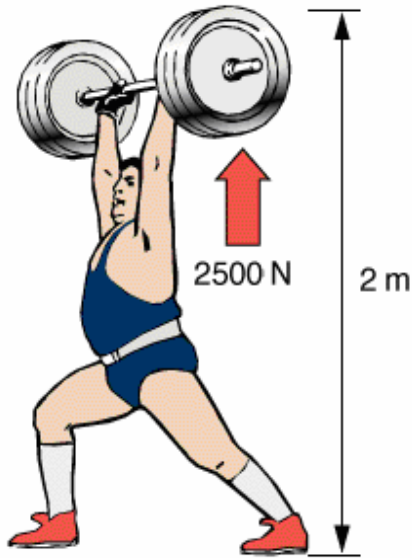
- a) What is the name of this device? (1 mark)
- b) Label the indicated parts with letters A, B, C, D, E and F from the given list. (3 marks)

Fuse (A), cable (B), cable clamp (C), neutral (D), Earth (E), Live (F)



- c) What is the function of
 - i) A fuse in the wiring
.....
.....
..... (2 marks)
 - ii) An earth wire in the connection.
.....
.....
..... (2 marks)
- d) A hot water heater is rated 2880 W 240 V. Calculate the operating current.
.....
.....
.....
..... (4 marks)

QUESTION SIX (12 Marks)



The diagram shows an athlete lifting a weight.

a) Where did the energy to lift the weight come from?

.....
.....
.....
..... (2 marks)

b) What energy changes take place when he lifts the weight?

.....
.....
.....
..... (2 marks)

c).How much work has he done in lifting the weight?

.....
.....
.....
.....(3 marks)

d). Define power.

.....
.....
..... (2 marks)

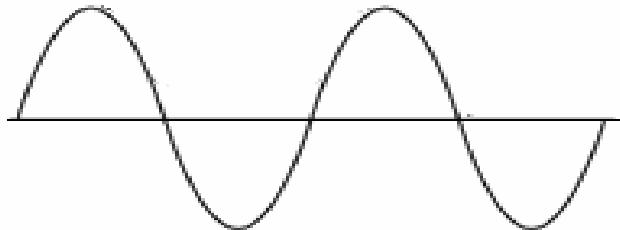
e) If the man lifts the weight in 2 seconds, calculate the power developed.

.....
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.....(3 marks)

QUESTION SEVEN (13 marks)

a) On the wave diagram below, mark the following with the given letters. (4 marks)

- I. Amplitude - A
- II. Wavelength - B
- III. Trough – C
- IV. Crest -D



b) State the difference between electromagnetic waves and mechanical waves.

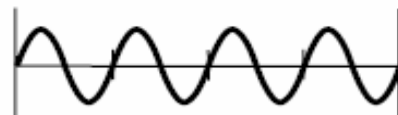
.....
.....
.....(2 marks)

c) Sound is a longitudinal wave. Explain what is meant by a longitudinal wave.

.....
.....
..... (2 marks)

d) The diagram shows a wave

i) State the number of cycles (wavelengths) shown(2 marks)



ii) This complete wave was produced in 0.2 s.
Calculate the period (time for one wave)

.....
..... (2 marks)

iii) Calculate the frequency of the wave.

.....
.....
..... (3 marks)

QUESTION EIGHT (13 Marks)

a) Define

i) Velocity

.....
.....(2 marks)

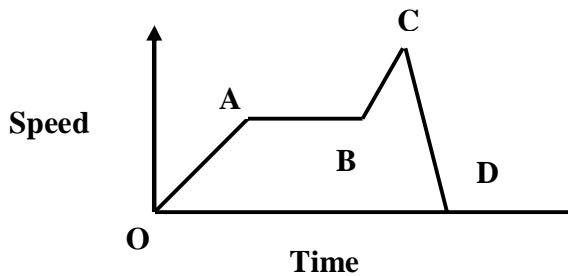
ii) Acceleration

.....
.....(2 marks)

b) Give a reason why a passenger is pushed to the front when a vehicle suddenly stops.

.....
.....
.....(2 marks)

c) The following diagram shows the speed-time graph for a car.



Explain in terms of the motion of the car the meaning of parts of the graph

i) AB

ii). BC

iii) CD (3Marks)

d) A car of mass 1000 kg initially moving with a velocity of 20m/s accelerates to a velocity of 35 m/s in 5 seconds. Determine the resultant force acting on the car.

.....
.....
.....
.....
.....(4 marks)

END