

R&PUBLIC OF SOMALILAND

FORM FOUR EXAMS, 2022

PHYSICS



NATIONAL EXAMINATION BOARD



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Total score

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Name

School.....

Roll No.....

Republic of Somaliland

Somaliland National Examination Board

Form Four

**PHYSICS
EXAMINATION**

JUNE 2022

TIME 2 HOURS

Plus 10 Minutes for reading through paper

INSTRUCTIONS TO CANDIDATES

- This paper consists of 12 printed pages.
- Count them now. Inform the invigilator if there are any page missing.

PART 1: 20 MULTIPLE CHOICE QUESTIONS

40 Marks

PART 2: 8 STRUCTURES QUESTIONS

60 MARKS

TOTAL

100 MARKS

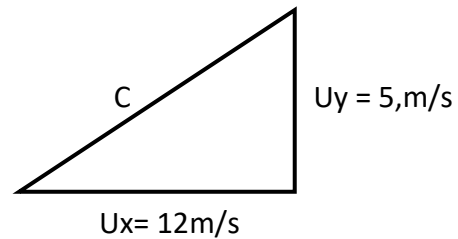
- Answer ALL questions in part 1 and 2
- NO extra papers are allowed

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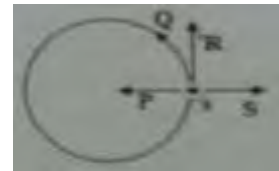
PART ONE MULTIPLE CHOICE QUESTIONS

(40 MARKS)

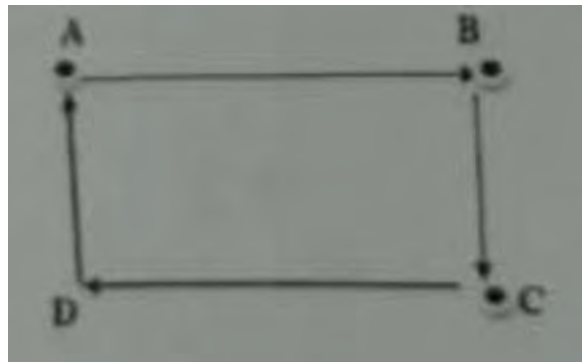
1. Find the accelerations of a car which slows down from 30m/s to 10m/s in 5s
 - a. 2m/s^2
 - b. 4m/s^2
 - c. 5m/s^2
 - d. 6m/s^2
2. A projectile is thrown, so that its horizontal component of $U_x = 12\text{m/s}$ and vertical component $U_y = 5\text{m/s}$ the initial velocity (resultant)
 - a. 4m/s
 - b. 7m/s
 - c. 13m/s
 - d. 17m/s



3. A ball moves along circular path as shown in the figure at x. if the string breaks in which direction P, Q, R or S will the ball travel?



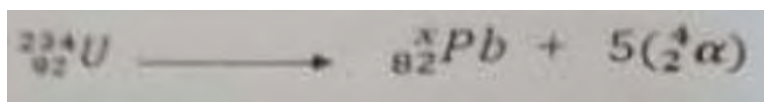
4. Power is defined as
 - a. Distance traveled in unit time
 - b. Energy transferred in unit time
 - c. Displacement in unit time
 - d. Change of velocity per unit time
5. An object travels from A through displacement of the object at A is
 - a. 0m
 - b. 6m
 - c. 14m
 - d. 22m



6. In swimming water is pushed backwards and as a result , the swimmer moves forwards this is an example of newton's
- First law of motion
 - Second law of motion
 - Third law of motion
 - Law of universal gravitation

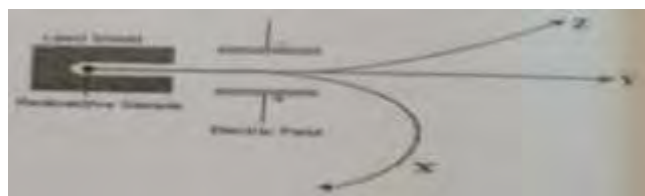
7. In the nuclear equation shown below, what is the value of x?

- 10
- 20
- 210
- 214



8. The figure below shows a source of nuclear radiation directed into an electric field the letter Z stand for

- Alpha particle
- Beta particle
- Gamma rays
- X-rays

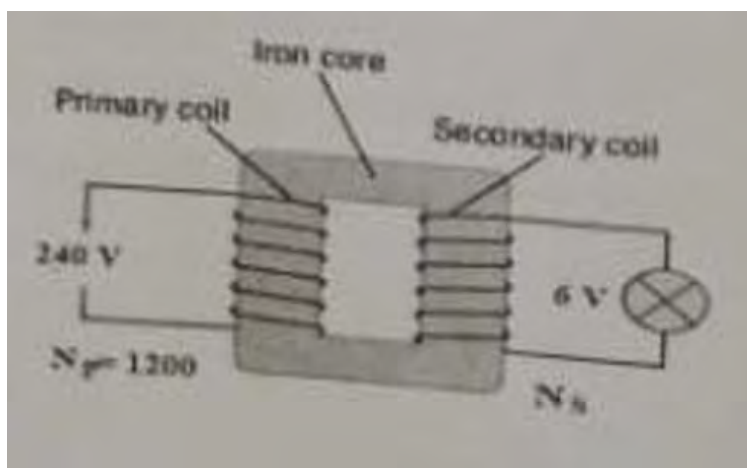


9. Which of the following application of radio-activity is used to estimate the ages of prehistoric events?

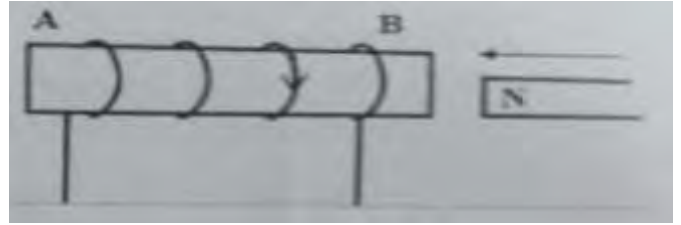
- Sterilization
- Carbon dating
- Tracers
- Radiotherapy

10. A transformer steps down mains supply from 240 v to 6v if the primary coil has 1200 turns how many turns are in The secondary coil

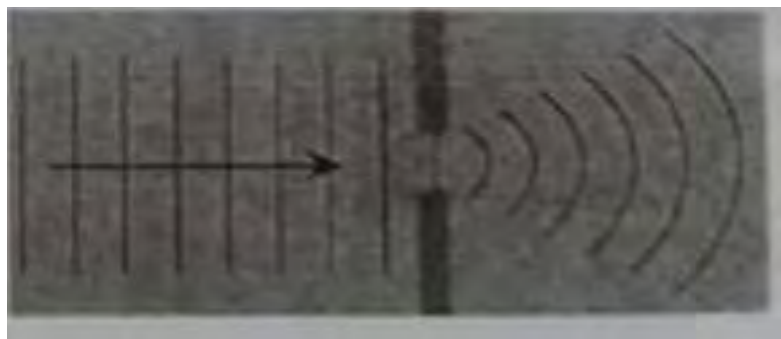
- 15
- 30
- 60
- 120



11. Mutual induction is a process of inducing current by using
- Two coil placed side by side
 - A coil moving over stationary magnet
 - A magnet moving inside stationary coil
 - A magnet and a coil moving together
12. The figure below shown N-pole of magnet pushed into a coil of wire. Which of the following statement is correct?



- Current flows in the direction Shown by the arrow
 - End B becomes south pole
 - The effect is called motor effect
 - End B attracts the magnet
13. In radio transmitter, the function of the modulator is to
- Add AF signal to RF carrier
 - Separate RF carrier from Af signal
 - Amplify the Af Signal
 - Amplify the RF carrier signal
14. Which of the properties belongs to digital signal?
- Continuous
 - It consist of high and low (0 and 1) value
 - Its symbol is
 - It has only on value
15. Which of the following properties of waves is illustrated by the diagram below?



16. For the wave shown in the figure, write down what the letter (x) stand for

- a. Wavelength
- b. Period
- c. Amplitude
- d. Frequency



17. Refraction of light is defined

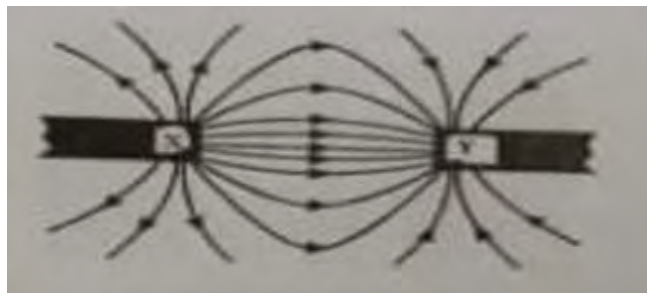
- a. Bouncing light rays from a barrier
- b. Bending of light rays due to medium
- c. Spreading of light beyond gap in a barrier
- d. Polarizing of light ray

18. If a heated in the same way. Water heats up slower than sand. This is because

- a. Water is a liquid
- b. Water has high specific heat capacity
- c. Water has low specific heated capacity
- d. Water can be turned into steam

19. The figure below shows the magnetic field between two magnets which row stands for the correct poles of the two magnets

	X	Y
A	N	N
B	N	S
C	S	N
D	S	S



20. 20cm is the same as:

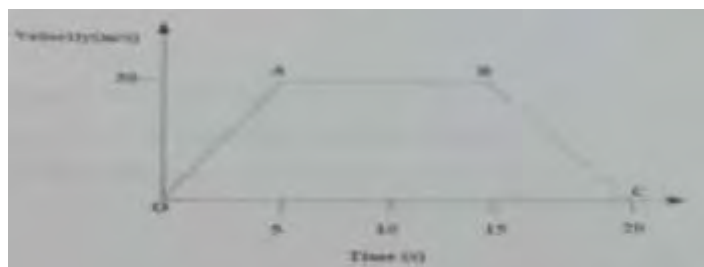
- a. 0.002m
- b. 0.02m
- c. 0.2m
- d. 2m

Part two: Structured Questions

(60 marks)

1. The figure shown below a velocity –time graph of a moving body. Look at it carefully
And then answer the following questions

- a. Describe the motion of the body in
Word (2 marks)



- b. From the graph, calculate the acceleration of the motion in region OA
(2 marks)

.....
.....
.....

- c. Use the area under the graph to calculate the total distance travelled
(2 marks)

.....
.....

2. An object is projected from appoint O with an initial velocity of 30m/s at an angle
Of 60° with the horizontal, as in the figure
Find

- a) Horizontal and vertical components of the initial
Velocity U_x and U_y (2 marks)



- b) Time taken to reach to the maximum height (2 marks)

.....
.....

- c) Maximum height reached by the object (2 marks)

.....
.....
.....

3. In the figure a ball of mass 2kg slides down and inclined plane it reaches the bottom with a velocity of 12m/s

- a. At this point B, calculate the kinetic energy
Of the ball (2 marks)



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.....
.....

- b. Keeping in mind with the law of conservation of energy. What is the
Gravitational potential energy at point A (the top of plane)? (2 marks)

.....
.....
.....

- c. Use your answer to part (b) to calculate the height h of the slope (2 marks)

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4. A sound is a type of wave produced by a vibrating object.

- a) Sound cannot travel through vacuum. This is because sound is
Electromagnetic wave

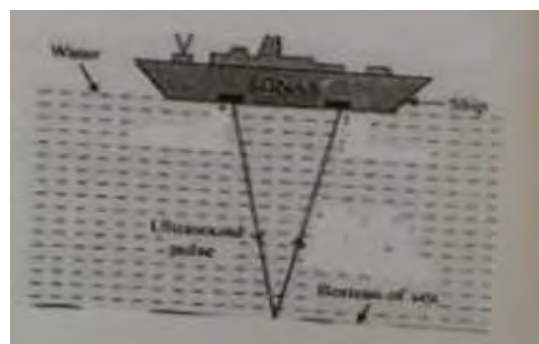
(1 marks)

Mechanical wave

- b) A ship uses an echo sonar to measure the
depth of water underneath

- i) What is meant by echo sound? (1 mark)

.....
.....



- ii) A ship sends ultrasound pulses to sea bed and receives the echo after 2s. how deep is the water, if the speed of sound in water is 1500m/s
(2 marks)

.....
.....
.....

- c) Write down one other uses for echo sounder (2 marks)

.....
.....

5. Radioactive decay is a process of disintegration of unstable nuclei. There are Three types of nuclear radiations alpha, beta and gamma

- a. Which of these radiations (2 marks)

- i) Is the same as helium nucleus?

.....

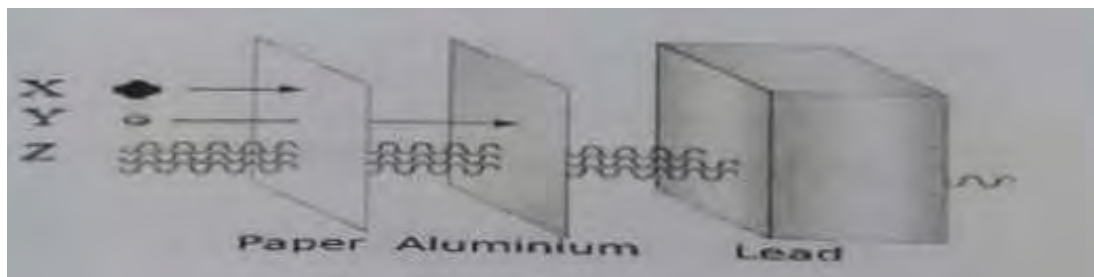
- ii) Is an electromagnetic wave?

.....

- b. What is the mass number of alpha, shown here by x? (1 mark)

.....

- c. The diagram shows the different penetrating powers of the radiations



Label each type of radiation

(3 marks)

X= _____

Y= _____

Z= _____

6.

a. Define half-life of radioactive sample?

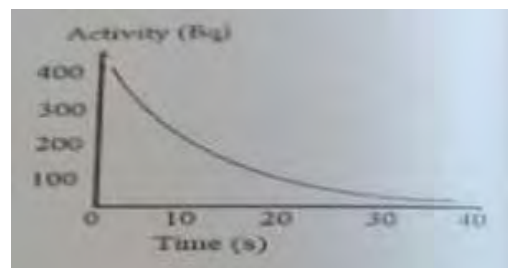
(2 marks)

.....
.....

b. The figure shown a decay curve for radioactive sample. Look at it carefully
and then answer the questions that follow
the half-life of the sample is 10hrs
Estimate the activity of the sample after 15hrs

(2 marks)

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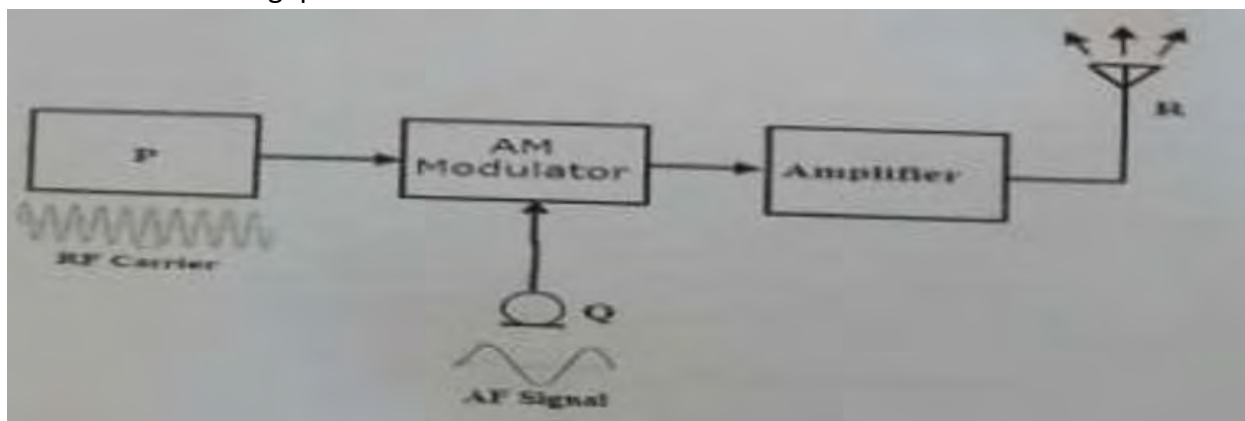


c. Write down in two radioactive detectors

(2 marks)

- i. _____
- ii. _____

7. The diagram shows a system of radio telecommunication. Look at it carefully and then
answer the following questions



a. The system represent

Radio receiver

(1 mark)

Radio transmitter

- b. Name the parts of the diagram labeled (3 marks)

P _____

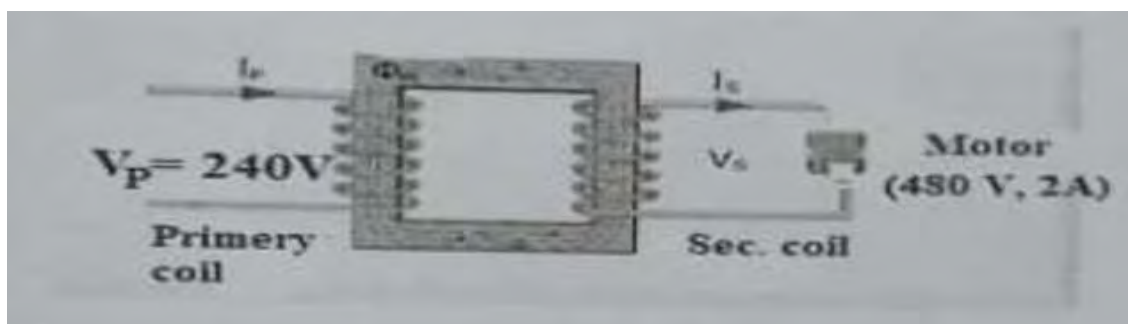
Q _____

R _____

- c. What is the function of the modulator? (2 marks)

.....
.....

8. The diagram shows a transformer used to operate an electric motor



- a. Describe the function of a transformer in electric circuits (2 marks)

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- b. What is the turns ratio of the transformer (2 marks)

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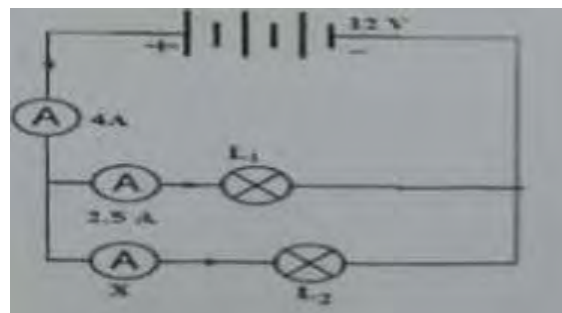
- c. Work out the resistance of the motor (2 marks)

.....
.....

9. Two lamps are arranged in parallel
and a voltage of 12v is applied across them.

- a. What is the value of the current x flowing
Through I_2 (2 marks)

.....
.....



- b. Which lamp I_1 or I_2 has more resistance and why? (2 marks)

.....
.....

- c. In the home, lamps are arranged in parallel write down any two advantages
Of parallel arrangement (2 marks)

1. _____
2. _____

10. Pressure is defined as force per unit area. For fixed force , pressure is inversely
Proportional to the area.

- a. Explain why a sharp knife cuts something easily (2 marks)

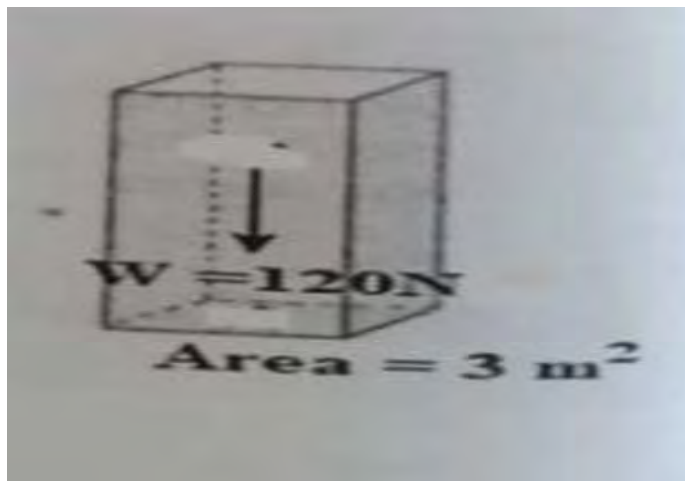
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- b. Explain why tractors big tires prevent it from sinking in soft sand (2 marks)

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.....

- c. Calculate the pressure on the base exerted by the block. (2 marks)

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END