REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie

MINISTERE DES ENSEIGNEMENTS SECONDAIRES

CELLULE D'APPUI A L'ACTION PEDAGOGIQUE
ANTENNE RÉGIONALE DU NORD OUEST

BP 2183 MANKON BAMENDA
TEL 233 362 209
Email : trubamenda@yahoo.co.uk

TEACHERS' RESOURCE UNIT TRU-RIP-STA MOCK EXAMS CAMP-BAMENDA NORTH WEST REGION

REPUBLIC OF CAMEROON
Peace-Work-Fatherland

MINISTRY OF SECONDARY EDUCATION

TEACHERS' RESOURCE UNIT
REGIONAL BRANCH FOR THE NORTH WEST

P.O. BOX: 2183 MANKON BAMENDA
TEL 233 362 209
Email : trubamenda@yahoo.co.uk

MARCH 2022

The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy, in collaboration with NWAPT	SUBJECT CODE NUMBER **0580**	PAPER NUMBER **2**
GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION	SUBJECT TITLE **PHYSICS**	
ORDINARY LEVEL		

Time Allowed: **TWO and a half hours**

INSTRUCTIONS TO CANDIDATES

Mobile phones are **NOT ALLOWED** in the examination room.

Answer ALL questions.

SECTION I
This section and designed to be answered in **1 hour**.

SECTION II
The questions in this section are paired. Answer **ONLY the EITHER or the OR question.** All questions carry equal marks. This section is designed to be answered in **1½ hours**. All questions carry 20 marks.

For your guidance the approximate marks for each part of a question are indicated in brackets.
You are reminded of the necessity for good English and orderly presentation in your answers.

In calculations, you are advised to show all the steps in your working, giving your answers at each stage.

Where necessary, assume the acceleration of free fall, $\mathbf{g = 10\ m\ s^{-2}}$.

Calculators may be used.

SECTION 1: (one hour). Attempt all questions in this section.

1. a) Define work and state its S.I unit (2mks)
   b) Differentiate between scalar and vector quantities, giving one example in each case (2mks)
   c) Explain the following observations; (2mks)
   i) It is easier to cut with a sharp knife than with a blunt knife (2mks)
   ii) Fishes at the bottom of a sea experience higher pressure than those at the surface of the sea.
2. a) Mercury has a density of 13600 kgm^{-3}. (1mks)
   Defined the underlined word
   b) A room has dimensions 5m by 4m by 3m. It is filled with air of density 1.2 kgm^{-3} . Determine the (2mks)
   i) volume of air in the room. (2mks)
   ii) mass of air in the room (2mks)
   iii) weight of air in the room.
3. Figure 1 below shows a simple circuit diagram

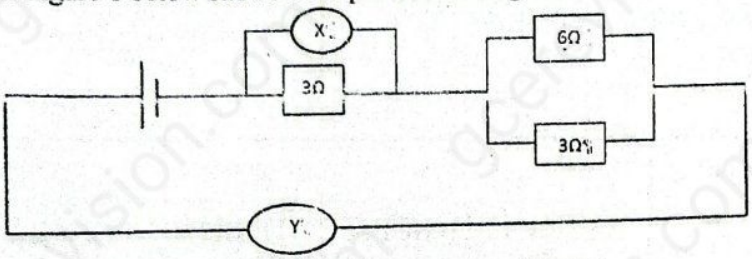


Figure1

   i) Identify with reasons the instruments labeled X and Y (2mks)
   ii) Calculate the total resistance of the circuit (2mks)
   iii) What is the reading of meter Y (2mks)
4. a) What do you understand by the term **doping**? (1mks)
   b) Distinguish between intrinsic and extrinsic semi-conductors, giving one example in each case. (4mks)
5) The section of the wave below is a portion of a water wave travelling at a speed of 3m/s.

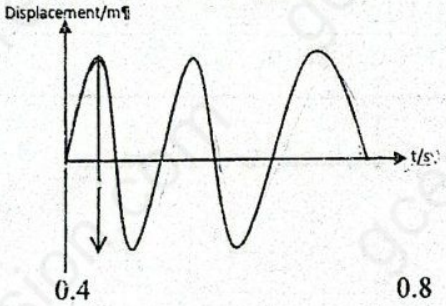


Figure 2

Find

   a) Amplitude (1mk)
   b) Frequency (2mks)
   c) Wavelength of the wave (2mks)
6. a) Define the following terms
   i) Isotopes (1mk)
   ii) Half-life (1mk)
   iii) Radioactivity (1mk)
   b) A uranium ($^{238}_{92}U$) nucleus undergoes 2 alpha decay followed by 2 beta decay and finally a gamma decay to form a new element $^{A}_{Z}X$.
   i) Write a balance nuclear equation of the transformation (2mks)
   ii) What term best describes the decay process? (1mk)
   iii) What do A and Z each represent in the new element (2mks)
   iv) State which of the above mentioned radiations is most ionizing. (1mk)

SECTION 2 (one and a half hours)

Answer all three questions in this section.

Each question is divided into parts labeled "**EITHER**" and "**OR**". For each question, answer only one part.

Answer EITHER 7a,b and c OR 7d and e.

7. a). i) Define force (1mk)
   ii) Differentiate between mass and weight and state the unit of each. (4mks)
   b).i) Describe an experiment to measure the acceleration due to gravity by the free fall method. Your description should include an experimental setup, procedure, measurements made, calculations and any precautions taken. (6mks)

ii) In one such experiment, the electromagnet released a steel ball and it took 0.5s to fall to a platform. Calculate the distance (height) between the electromagnet and the platform. (3mks)

c) i) what is dispersion (1mk)

A small object is placed 15.0 cm away from a converging lens of focal length 10.0 cm.

ii) Draw a ray diagram to show the position of the image formed (3mks)

iii) State 2 characteristics of the image formed (2mks)

OR 7d and e

7.d). i) Define energy (1mk)

ii) Differentiate between heat capacity and specific heat capacity and state the unit of each. (4mks)

iii) Describe an experiment to measure the specific heat capacity of a liquid by electrical method. Your description should include an experimental setup, procedure, measurements made, calculations and any precaution taken. (6mks)

iv) In one such experiment, 3 kg of water were heated for 5mins by a heater of 2000W power rating. If its specific heat capacity is 4200 J/KgK. Calculate the rise in its temperature (3mks)

e). i) What is charging? (1mk)

ii) A pitch ball is placed on an insulating stand. With the use of a polythene rod, the ball is charged by induction. Explain using diagrams how the ball was charged. (4mrks)

iii) Explain why the ball was placed on an insulating stand (1mks)

Answer EITHER 8a,b and c OR 8d,e and f

8 a) What is a machine (1mk)

b) Figure3 below shows a simple pulley system used to raise a load of 500N up a storey building under construction by applying an effort of 200N.

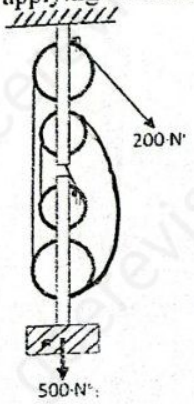


Figure 3

i) What is the velocity ratio of the pulley system? (1mk)

ii) Calculate the mechanical advantage of the pulley system (2mk)

iii) Calculate the efficiency of the pulley system (2mks)

iv) State one reason why the efficiency is less than 100% (1mks)

c) i) State Ohm's law and name one material that obeys the law (2mks)

In an experiment to verify Ohm's law the following ammeter (A) and voltmeter (V) readings were taken.

V/V	0	1.0	1.6	3.2	4.8	6.0	8.0
I/A	0	0.12	0.2	0.4	0.6	0.75	1.0

ii) Plot a graph of voltage (Y-axis) against current (X-axis) (5mks)

iii) Determine the slope of your graph and state its physical significance (3mks)

iv) Calculate the cost of running a 3000 W heater for 5hrs each day for 2weeks if 1KWh is 75 FCFA (3mks)

OR 8d,e and f

8 d) An electric train starts from rest with a uniform acceleration of $1.5ms^{-2}$ for the first 10 s and continuous accelerating uniformly at 0.5 ms^{-2} for a further 20 s. It continuous at constant speed for 90 s and finally takes 30 s decelerate uniformly to rest. (1mk)

i) What is uniform acceleration (3mks)

ii) Sketch a velocity time graph for the motion, indicating important values on both axes (2mks)

iii) From your graph or otherwise, deduce the total distance travelled (2mks)

iv) What is the average speed of the train for the whole journey

e) A trolley of mass 2 kg, moving with a velocity of 5m/s collides with a second stationery trolley of mass 8 kg bounces back with a velocity of 3 m/s (2mks)

i) State the principle of conservation of linear momentum (2mks)

ii) Calculate the velocity of the second trolley after collision (2mks)

iii) State Snell's law

f) In an experiment to verify this law, the sine of the angle of incidence (sini) and corresponding sine of angle of refraction (sinr) for light moving from air to glass are recoded in the table below.

Sini	o.34	0.50	o.64	0.77	0.87	0.98
Sinr	0.22	0.33	0.42	0.50	0.57	0.66

i) Plot a graph of sini (Y-axis) against sinr (X-axis) (5mks)

ii) Determine the slope of the graph (2mks)

iii) State the physical significance of the slope (1mks)

Answer EITHER 9a, b and c OR 9d, e and f

9 a i) Differentiate between elastic and inelastic collision stating one example of each type (4mks)

ii) In an experiment to verify Hooke's law, 2.4 N weight produces an extension of 2.2cm on a spring. If the original length of the spring is 10.0cm, calculate the force needed to stretch the spring to 11.6cm length (3mks)

iii) Name and explain one instrument whose functioning is based on the application of Hooke's law (2mks)

b i) Define contact and non-contact forces, giving an example in each case (4mks)

A woman pushes a 50 Kg block up a hill inclined at an angle of 20^0 to the horizontal.

ii) Show with the aid of a free body diagram all the forces acting on the object up the hill (2mks)

iii) Calculate the horizontal components of the force she applied (2mks)

c) Figure 4 below shows a simple beam balance used in a village market to sell meat. The balance has a quantity of meat at one end of a bar being supported by a standard weight of 30 N placed 16.0 cm from the pivot.

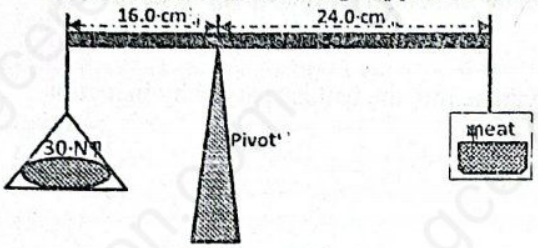


Figure 4

i)State the principle of moment (2mks)

Calculate

ii) The moment of the standard weight about the pivot (2mks)

iii) the weight of the meat on the scale pan, if the weight of the bar is 20.0N (2mks)

iv) State if the seller is selling mass or weight (1mk)

OR 9d, e and f

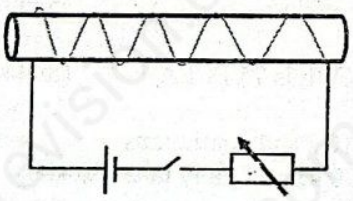
9 d i) Differentiate between longitudinal and transverse waves, giving one example of each type (4mks)

ii) In an experiment to measure the speed of sound in air using the reciprocal gun firing method, Joan fired a gun and it took 2.0 s for Peter to hear the sound. On the other hand, when Peter fired the gun, it took 2.3 s for Joan to hear the sound. Given that the distance between them is 709.5 m, calculate the speed of sound in air. (3mks)

iii) Name one factor that caused Joan and Peter to hear the sound at different time intervals after the gun was fired and explain how the factor affects the speed of sound in air. (2mks)

Figure 5 shows a length of copper wire wound on a cardboard tube and its ends connected to battery through a rheostat and switch.

e)

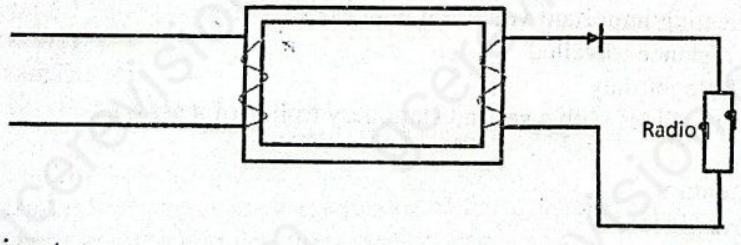


i) Copy the diagram and sketch the magnetic field when the switch is closed. Indicate its polarity (2mks)

ii) State one way of making the magnetic field stronger (1mk)

iii) Name one device that can make use of electromagnets (1mk)

f) Figure 6 shows the input and output connections of a small transformer made by a student.



input output

i) Identify the circuit component X (1mk)

ii) On a separate axes, draw the wave forms of the input and that through the radio (2mks)

iii) State 2 reasons why the efficiency of the transformer may be less than 100 % and give possible remedies to the problems (4mks)

END