NAME: ..... ADM NO: .....

SCHOOL: ..... DATE : .....

CANDIDATE'S SIGNATURE: .....

232
PHYSICS
THEORY
TIME: 2 HOURS

2016
FORM 2

PHYSICS
PAPER 1
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

(a) *Write your **Name, Admission Number** and **School** in the spaces provided.*
(b) ***Sign** and write the **date** of examination in the spaces provided above.*
(c) *This paper consists two sections **A** and **B**.*
(d) *Answer **all** questions in Section **A** and **B** in the spaces provided.*
(e) *All working **MUST** be clearly shown.*
(f) *Mathematical tables and electronic calculators **may be** used.*

FOR EXAMINER'S USE ONLY

	QUESTION	MAX. SCORE	CANDIDATE'S SCORE
	1 – 13	100	

SECTION A (25 MARKS)

Answer ALL questions in this section in the spaces provided

Figure 1 below shows parallel forces acting on a body AB. Indicate on the diagram another force to make the resultant force on the body 10N to the right. (2mks)

Figure 1

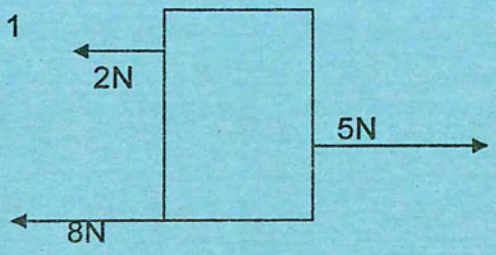
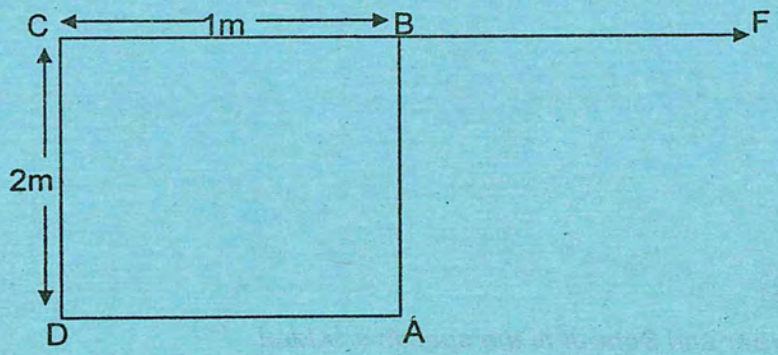
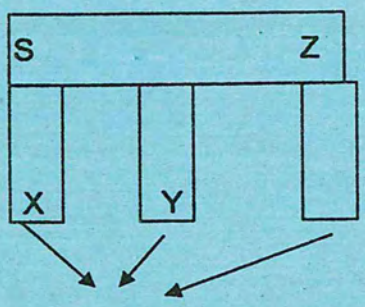


Figure 2 below shows a metal plate 2m x 1m of negligible thickness and mass 1.0kg, a horizontal force F, applied at B just makes the plate to tilt. Calculate the value of the force F. (4mks)



In an oil drop experiment it was found that one drop spreads on water to form a path of diameter 0.8cm and thickness 2.0×10^{-6}mm. Calculate the radius of the drop. (4mks)

4. Figure 4 below is a service of magnets where one pole is labeled and the other three bar magnet is placed near it. Iron nails are attracted to the lower ends on the magnets as shown.



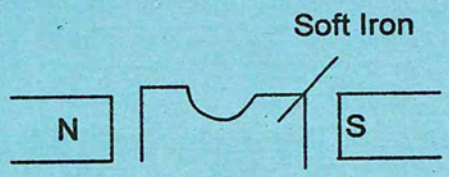
(a) Identify the poles marked X, Y and Z. (3mks)

X:.....

Y:.....

Z:.....

(b) In the figure shown below is a soft iron ore placed between poles of the magnets. Copy the diagram and sketch the magnetic field pattern. (3mks)

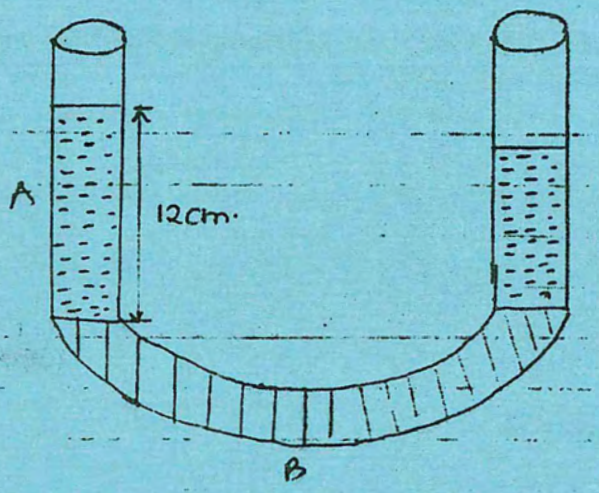


5. A uniform metre rule has a fulcrum at the centre. It is balanced by a force of 50N at the 15cm marks, 20N at the 70cm mark and Q neutrons at the 60cm mark.

(a) Sketch a diagram to represent this information. (4mks)

(b) Determine the force Q. (4mks)

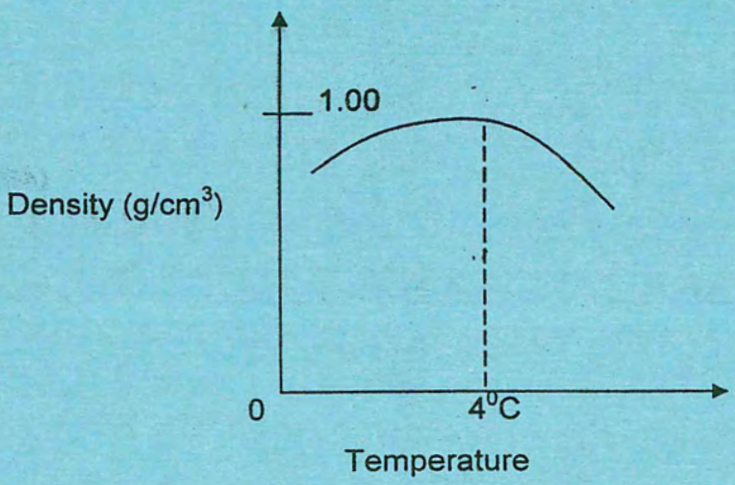
. Below are three liquids A, B and C in a U-tube. The density of A is 600kgm-3 while that of C is 1000kgm^{-3}. If the height of A is 12cm.



(a) Find the height of liquid C. (4mks)

(b) Name **two** factors that affect liquid pressure. (2mks)

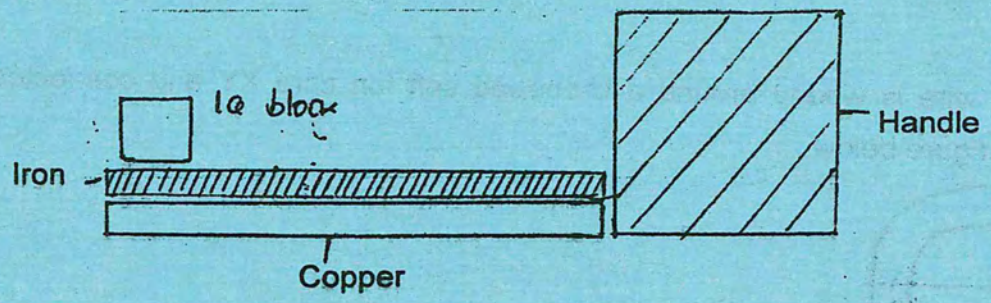
. The sketch below shows the density temperature graph of a liquid.



(a) Name the liquid represented by the graph. (1mk)

(b) Explain your answer in (a) above. (2mks)

8. The figure below shows a cube of ice resting on a bimetallic strip at room temperature. The strip is made of iron and copper. State and explain what happens to the bimetallic strip. Show using a diagram. (3mks)



9. A convex mirror of focal length 9cm produces an image on its axis 6cm from the mirror.

(a) Determine the position of the object. (4mks)

(b) State characteristics of an image observed in a concave mirror when the object is between the focal point and the mirror. (3mks)

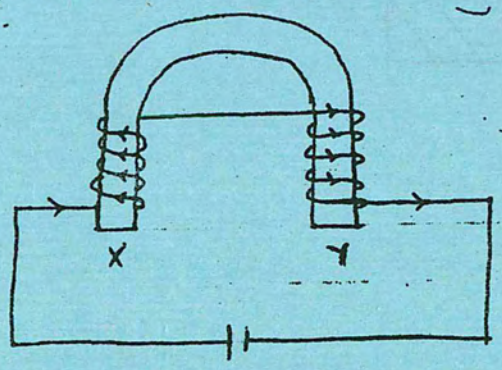
(c) Give **two** uses of each of the following mirrors. (6mks)

(i) Convex

(ii) Concave

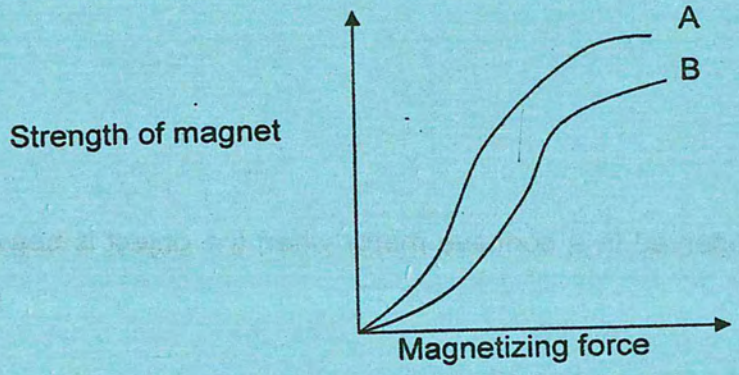
(iii) Parabolic

10. (a) A coil of insulated wire is wound around a U-shaped soft ion core XY and connected to a battery as shown in the figure below.



State the polarities of ends X and Y. (2mks)

(b) The graph below represents two magnetic materials.



(i) Which material is easier to magnetize? (1mk)

(ii) Which material forms a stronger magnet? (1mk)

(iii) State **one** application of each. (2mks)

11. (a) State the principle of moments. (2mks)

(b) A uniform metre rule of mass 120g is pivoted at the 60cm mark. At what point on the metre rule should a mass of 50g be suspended for it to balance horizontally? (2mks)

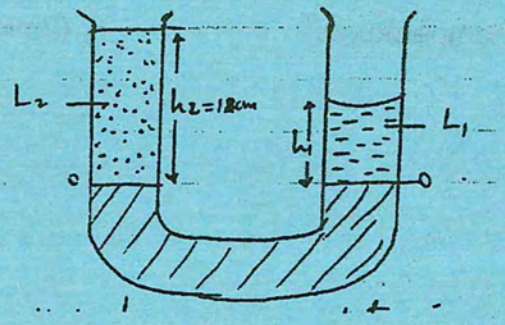
(c) State the factors that affect the stability of objects. (2mks)

12. (a) Give **four** differences between mass and weight. (4mks)

(b) State Pascal's principle. (1mk)

(c) Name **two** applications of Pascal's principle. (2mks)

(d) Figure below shows a U-tube containing two liquids L_1 and L_2 of densities $1.6g/cm^2$ and $0.8g/cm^3$ respectively in equilibrium.

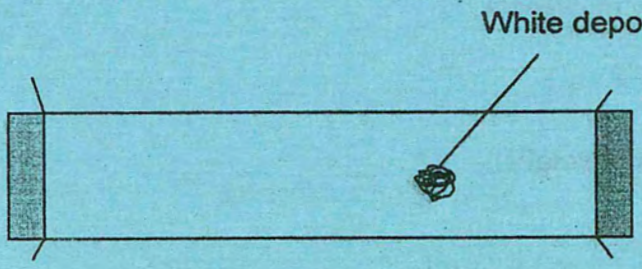


Given that $h_2 = 18cm$, determine the value of h_1. (3mks)

13. (a) What is diffusion? (1mk)

(b) A smoke cell contains a mixture of trapped air and smoke. The cell is brightly lit and viewed through a microscope. State and explain what is observed. (2mks)

(c) In the figure below, ammonia gas and acid gas diffuse and react to form a white deposit on the walls of a long glass tube as shown.



(i) What conclusion can be made from this experiment? (1mk)

(ii) How does the density of a gas affect the rate of diffusion? (1mk)

(iii) The experiment is performed at a lower temperature. State and explain what would happen to the rate of diffusion of the gases at high temperatures. (2mks)