PHYSICS

FORM 1 PHYSICS
END OF TERM 1
TIME 2 HRS

PHYSICS FORM 1

1. (a) Use the figures to indicate the correct position in which the reading should be taken (state the correct reading) (1mk)

(b)
Why

must the eye be positioned in the place you have chosen? (1mk)

2. A piece of metal weighs 3N in air and 2N when totally immersed in water. Find the up thrust. (1mk)

3. Give a reason why air is not commonly used as a fluid in a hydraulic lift. (1mk)

4. (i) State two factors which affect pressure in solids(2mks)

(ii) Suggest three ways in which friction can be minimized. (3mks)

(iii) State three uses of friction (3mks)

5. Fig 2 shows a cylindrical can be filled with a liquid of density 0.8g/cm^3. A hole of diameter 2.0 cm is drilled at a depth of 2.8 from the top of the can.

(i) The cross sectional area of the hole. (take $\prod$=22/7) (2mks)

(ii) The maximum pressure exerted by the liquid at the hole. (2mks)

(iii) The maximum force exerted on a jet of liquid through the hole. (2mks)

6. State the differences between mass and weight. (4mks)

Mass	Weight

7. (a) Describe the first aid measures taken when the following accidents occur in the laboratory
(i) Electric shock (1mk)

(ii) Acid burns (1mk)

(b) State any four career opportunities in physics. (4mks)

(c) Describe the application of physics knowledge in the following fields.
(i) Defense industry. (2mks)

(ii) Medicine (2mks)

(iii) Agriculture (2mks)

8. (a) Differentiate between a scalar and vector quantity. (2mks)

(b) Show diagrammatically how forces 4N, 6N and 8N can be combined to give a resultant force.
(i) 18N (1mk)

(ii) 2N (1mk)

9. Figure 3 shows a matchstick rubbed at one end with soap and placed on the surface of water

(a) On the diagram indicate the direction of motion of the matchstick (1mk)

(b) Explain the direction of movement (2ks)

10. (i) A tin containing 5000cm^3 of paint has a mass of 7.0 kg. If the mass of the empty tin, including the lid is 0.5 kg. Calculate the density of the paint (3mks)

(ii) The tin is made of a metal which has density 7800kg/m^3. Determine the volume of the metal used to make the tin and lid (2mks)

11. Name two forces that determine the shape of a liquid drop on a solid surface. (2mks)

12. State the S.I units of the following basic physical quantities. (5mks)
(i) Mass

(ii) Electric current

(iii) Length

(iv) Luminous intensity

(v) Thermodynamic temperature.

13. The diameter of a marble is stated as 3.65 cm. Convert this into S.I unit (2mks)

14. The diameter of a capillary tube is 1.0 mm. Calculate the cross-section area of the tube in cm^2 (Take π=3.012) (3mks)

15. The level of water in a burette is 25ml. Twenty drops each of volume $0.25cm^3$ were added to the burette. Determine
(a) The volume of water added to the burette (1mk)

(b) The new level of water in the burette. (2mks)

16. Convert each of the following measurements as indicated
(a) 50mg into kilograms (2mks)

(b) 0.02 tonnes into kilograms (2mks)

(c) 620 g into milligrams (2mks)

17. (a) Define pressure and state its SI units (2mks)

(b) Figure 4 below represents a motorcar hydraulic braking system
(i) State two properties of the liquid used as brake fluid (2mks)

(ii) Given that in figure 4 above, the master piston has an area of 15cm^2 and the slave piston has an area of 50cm^2 and a force of 100N is applied on the master piston. Find the force used to stop the car. (3mks)

(iii) Compare the values of pressure in the two pistons above and give a reason for your answer. (2mks)

(c) 180cm^3 of fresh water of density 1000kg/m^3 is mixed with 2200cm^3 of sea water of density 1025kg/m^3. Calculate the density of the mixture. (4mks)