NAME:……INDEX……..…..DATE

SCHOOL:……..……SIGNATURE……

232
FORM TWO PHYSICS
END OF YEAR, 2017
2 HOURS

INSTRUCTIONS TO CANDIDATES

- *Write your name and index number in the spaces provided above*
- *Attempt all questions in all spaces provided*
- *Sign and write the date of the examination in the spaces provided*
- *Mathematical tables and electronic calculators may be used.*

For Examiner's Use Only

Section	Question	Maximum Score	Candidates' Score
A	Q1 – Q11	25	
B	Q12 Q13 Q14 Q15 Q16	11 11 14 10 10	
		80	

1. A student was heard saying “the mass of a ball on the moon is one sixth its mass on earth”. Give a reason why this statement is wrong. (2 mks)

2. Distinguish between mass and weight of a body stating the units for each. (2 mks)

3. State with reason the purpose of the oil that circulates in a motorcar engine.(2 mks)

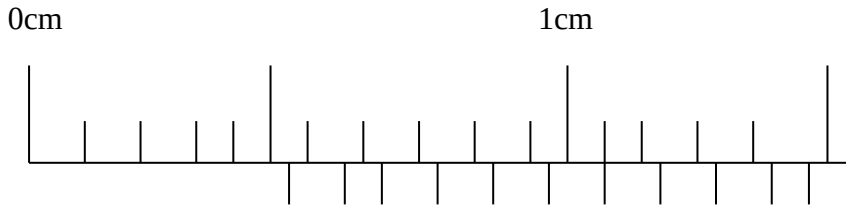
4. Name two types of forces which can act between objects without contact. (2 mks)

5. A house in which a cylinder containing cooking gas is kept unfortunately catches fire. The cylinder explodes. Give a reason for the explosion. (2 mks)

6. Give a reason why the weight of a body varies from place to place (2 mks)

7. State why a pin floating on water sinks when a detergent is added. (2 mks)

8. State the reading in the figure below



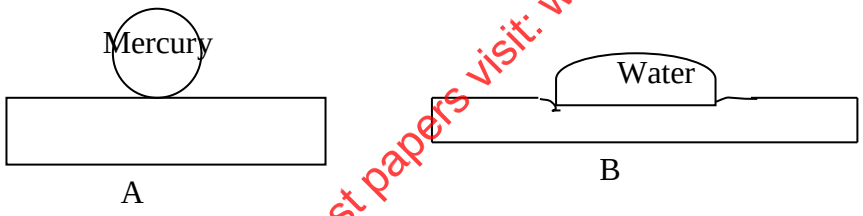
9. Explain why clinical thermometer should not be sterilized in boiling (2 mks)

10. State any three ways of increasing the strength of an electric motor (3 marks)

11. The figure below shows a solid cylinder standing on a horizontal surface. The cylinder is in stable equilibrium

On the horizontal space provided, sketch the cylinder in neutral equilibrium (1mk)

12. The figure below shows drops of mercury and water placed on clean glasses.



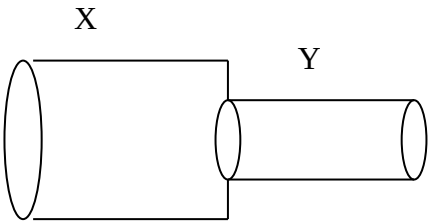
Explain the difference in the shapes of the drops. (2 marks)

13. A see – saw of length 5 m is pivoted at the centre. A student of mass 50kg sits at one end and is balanced by another student of mass 'm' sitting at a distance of 1m from the other end.
    (a) Make a sketch of the diagram (2 mks)

(b) Calculate the value of 'm' (2 mks)

14. An unloaded spring has a length of 15cm and when under a load of 24N it has a length of 12cm. What will be the load on the spring when length is 10cm? (3 mks)

15. The figure below shows water flowing in a constricting pipe. Section X has a cross-sectional area of $10.0cm^2$ and speed of 6cm/s. Find the speed at Y given the area is $2.5cm^2$ (3 mks)



16. The total weight of a car with passengers is 25,000N. The area of contact of each of the four tyres with the ground is $0.025m^2$. Determine the minimum car tyre pressure. (3 mks)

17. The reading on a mercury barometer at Mombasa is 760mm. Calculate the pressure at Mombasa (density of mercury = 1.36×10^4 Kgm^{-3}) (3 mks)

18. (a) Explain using the domain theory of magnetism why
(i) the strength of a magnet cannot be increased beyond a certain point (2 mks)

(ii) The increase in temperature weakens or destroys the magnetism of a magnet (2 mks)

(b) With the aid of a diagram, explain how bar magnets are stored so as to minimize self magnetization (3 mks)

(c) Explain the following terms
(i) Magnetic field lines

(ii) Magnetic field (2 mks)

(d) List three uses of magnets (3 mks)

(e) Explain the meaning of the terms
(i) Dipoles

(ii) Domain (2 mks)

(f) What are ferromagnetic materials? Give an example (2 mk)

19. (a) State the laws of reflection (2 mks)

(b) state the rules of reflection of light in curved mirrors (3 mks)

(c) An object of height 2cm is placed 8cm in front of a concave mirror of focal length 3cm. On the axis below, represent this information to locate the image formed (4 mks)

State the properties of the image (4 mks)

20. (a) State the Hooke`s law (2 mks)

(b) Define

(i) Elastic region plastic region

(ii) plastic region

(ii) Elastic limit (3 mks)

(c) A spring of length 7cm extends to 12cm when subjected to a force of 20N. Find

(i) The spring constant (3 mks)

(ii) The force that would produce an extension of 15cm (2 mks)

(iii) The new length if its now subjected to a force of 25N (2 mks)

(d) A spiral spring produces an extension of 16mm when a force of 0.3N is applied to it.
Calculate the spring constant of two such springs arranged in

(i) Series

(ii) parallel (4 mks)

21(a) A pendulum bob oscillates to 2cm on either side of its equilibrium. If it makes one cycle in 4 seconds, represent this information in a Displacement – Time wave (3 mks)

(b) Differentiate between transverse and longitudinal waves and give an example in each case (4 mks)

(c) Kiss Fm radio station broadcasts at 100MHz. If the radio waves travel at 3.0×10^8 m/s. Calculate its

(i) wavelength (3 mks)

(ii) Period (2 mks)

(d) A man stands in front of a cliff and makes loud sound. He hears the echo after 1.2 sec. If the speed of sound in air is 330m/s, calculate the distance between the man and the cliff (3 mks)