

Name: _____ Adm No: _____ Class: _____

Candidate's Signature: _____ Date: _____

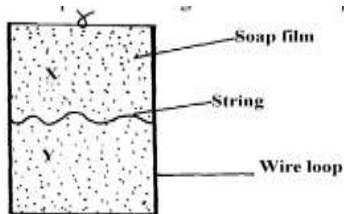
PHYSICS
FORM 2
END TERM 3 2024
Time: 2 HOURS

Instructions to Candidates

Answer all the questions in the spaces provided

1. Give a reason why water wets glass while mercury does not. (2mks)

2. Figure 3 below shows a wire loop with a string that has been dipped into soap solution

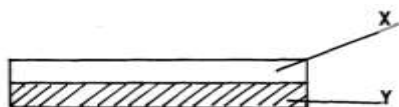


- i) Sketch a similar diagram to show the observed effect if the soap film is punctured at X (2mks)
3. The barometric height at sea level is 76cm of mercury while at a point on a highland it is 74cm of mercury. What is the altitude of the point? (Take $g = 10\text{m/s}^2$, density of mercury = 13600kg/m^3 and density of air as 1.25kg/m^3) (4mks)

4. a) Distinguish between gases and liquids in terms of inter molecule forces. (2mks)

b) Smoke particles in air when a ray of light is passed through it were observed to be in continuous, random movements. Explain the observation. (2mks)

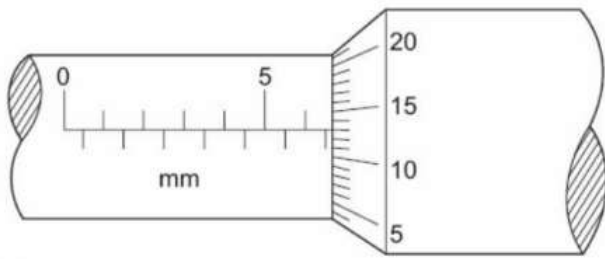
5. The figure below represents a bimetallic strip of metals X and Y at room temperature



a) Sketch a diagram in the space given below to show the shape when the strip is heated to a temperature above the room temperature given that X is iron and Y is brass. (2mks)

b) Explain the shape of the bimetallic strip in a) above (2mks)

7. A spherical ball of mass 0.0015 kg is held between the anvil and spindle of a micrometer screw gauge. The reading on the gauge when the jaws are closed without anything in between is 0.11mm. Use this information and the position of the scale in the figure below to answer the questions (a) and (b) below:



i. What is the diameter of the ball? (3mks)

b) Find the density of the ball bearing giving your answer correct to three significant (3mks)

8. a) State principle of moments (2mks)

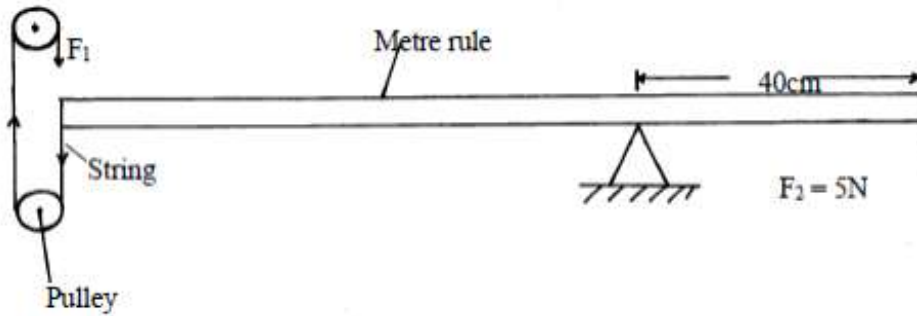
b) State two factors that affects moments (2mks)

c) A meter rule is pivoted at its center. A glass block is hanged from one end and the ruler is balanced horizontally by hanging masses of 100g and 50g at 60cm and 80cm marks respectively. Calculate the mass of the glass block. (3mks)

9. a) When is a body said to be in equilibrium?

(1mk)

b) The diagram below shows a uniform meter rule of mass 300g balanced by two forces F_1 and F_2 . Force F_2 is 5N. Assuming there is no frictional force on the pulleys,



Calculate the force F_1

(4mks)

c) State and explain two application of stability

(4mks)

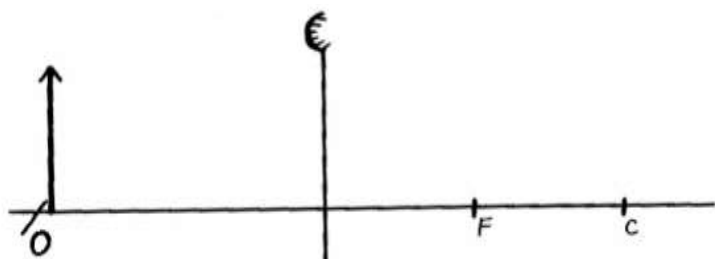
10. a) Define the following terms

(3mks)

- i. The Pole
- ii. The Principal axis
- iii. The radius of curvature

b) An object O is placed in front of convex mirror as shown in the diagram below.

- i. Complete the diagram to locate the position of the image. (3mks)



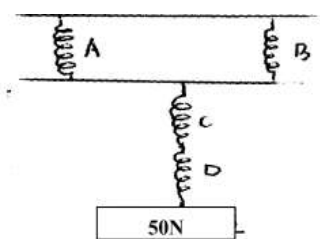
- ii. Give three characteristics of the image formed (3mks)

- c) Explain two reasons as to why convex mirrors are preferred when making driving mirrors (2mks)

11. a) State Hooke's law (1mks)

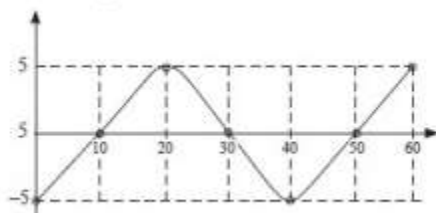
- c) State and explain two factors that affect the strength of a spring constant (4mks)

- c) The springs A, B, C and D are identical and each extends by 2cm when a force of 6N is suspended on each one of them. Determine the extension of the system (4mks)



12. a) Differentiate between electromagnetic and mechanical wave (2mks)

- d) Figure 8.19 shows a wave form in a string. The numbers in the diagram shows the scale in centimeters. The speed of the wave is 10.0 ms^{-1} .



With the reference to this wave motion, determine the:

- (a) Wavelength (1mk)
 - (b) Amplitude (1mk)
 - (c) Frequency (2mks)
 - (d) Period of the oscillation (2 mks)
13. Explain four factors affecting the strength of an electromagnet (4 mks)