

NAME.....INDEX NO.....

232/1
PHYSICS
PAPER 1 (THEORY)
JULY /AUGUST, 2009
TIME: 2 HRS

NANDI EAST DISTRICT JOINT EVALUATION TEST 2009

SECTION A (25 MARKS)

1. A vernier Calliper shown in figure 1 below has a zero error of -0.05cm .
Give the actual reading of the instrument. (1 mark)

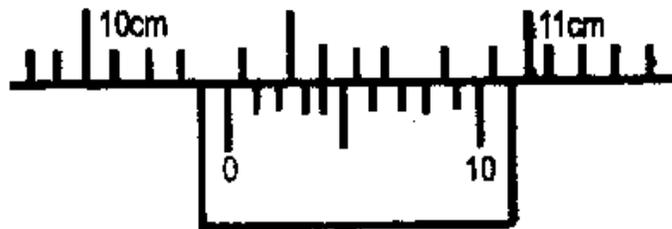


Fig 1.

2. A pupil said that the weight of a body varies from one place to another. How true is this argument. (2 marks)
3. What is the gravitational potential energy stored in a spring when stretched though 4 cm by a force of 2N (3 marks)

4. Figure 2 below shows a uniform bar of length 1 m and mass 80kg pivoted at 40cm mark

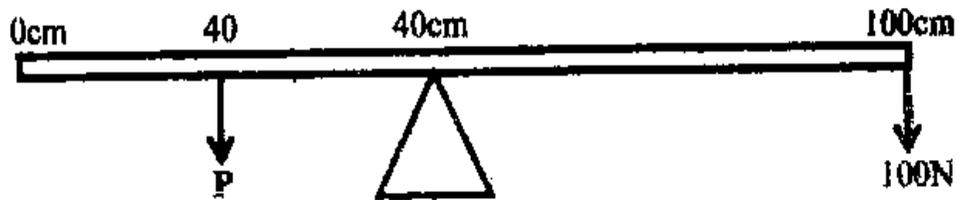


Fig. 2

Calculate the value of the force P, required to bring the system to equilibrium
(3 marks)

5. A siphon is used for transferring water from water tank to another empty one both tanks being at the same level when will the siphon stop working? (3 marks)

6. Figure 3 below shows a circuit diagram for controlling the temperature of a room

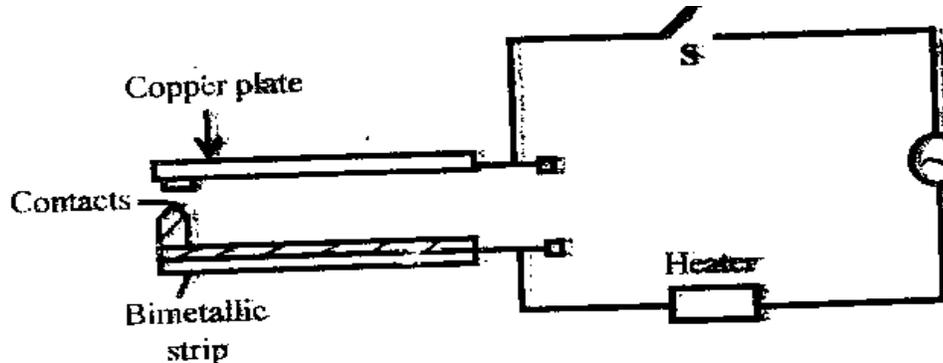


Fig. 3

State and explain the purpose of the bimetallic strip
(2 marks)

7. Briefly explain why a person should crawl close to the floor in a smoke filled room
(2 marks)

8. A box is dragged along a rough horizontal floor using a rope. If the force in the rope is 200N, how much work is done in moving the box a distance of 10m along the floor?
(2 marks)

9. Oil injected at a coastal town a speed of 12m/s where the diameter of the pipe is 7cm , flows at a point inland where the radius of the pipe is 0.5cm . Determine the speed of the oil at this point. (3 marks)

10. Figure 4 below shows an experimental set up to investigate the diffusion in gases

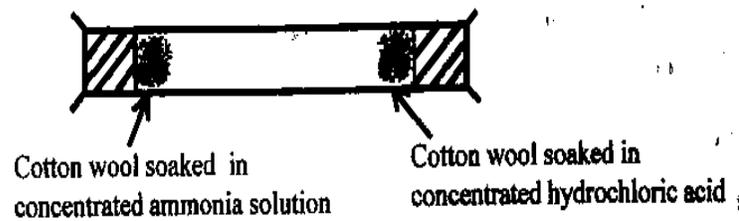


Fig. 4

- (a) State and explain the observation made in the above experiment (2 marks)

- (b) What conclusion can be made from the above observation (1 mark)

11. How much current is taken by a bulb whose rate is 100Ω and which is designed for mains supply of 250V (3 marks)

12. State and explain the type of the equilibrium illustrated by a solid right circular cone when balanced on its point as shown in figure 5 below (3 marks)

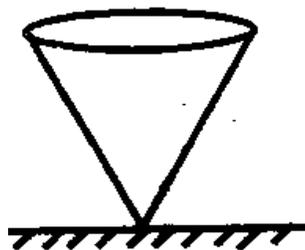


Fig 5

SECTION B: (55 MARKS)

13. (a) Define specific heat capacity

(1 mark)

(b) In an experiment to determine specific heat capacity of 500g block of metal using the electrical method, the heater used is rated 400W. The table below shows the readings

Time (s)	0	10	20	30	40
Temperature	10	30	50	70	90

(i) On the grid provided plot the graph of temperature ($^{\circ}\text{C}$) against time(s).

(5 marks)

(ii) Find the gradient of the graph stating its SI units

(2 marks)

(iii) Using the graph, determine the specific heat capacity of the metal (4 marks)

14. (a) State the law of floating

(1 mark)

- (b) Figure 6 below represents a block of uniform cross-sectional area 6cm^2 floating in two liquids A and B. The lengths of the blocks in each liquids are shown

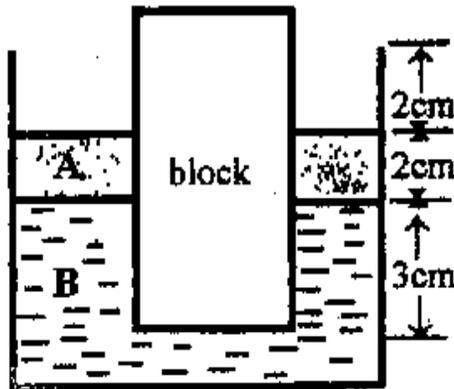


Fig. 6.

Given that the density of liquid A is 0.8g/cm^3 and that of B 1g/cm^3 , determine the:

(i) Weight of the liquid A displaced

(3 marks)

(ii) The weight of the liquid B displaced

(2 marks)

(iii) The density of the block

(3 marks)

15. (a) (i) Draw a velocity time graph to show the motion of a car that starts from rest and accelerant at 3m/s^2 in 10 seconds, moving with constant velocity for 5 seconds before coming to rest in 15 seconds

(3 marks)

(ii) Calculate the retardation of the car as it comes to rest

(3 marks)

- (b) (i) Explain why a body moving in a circular path with a constant speed is said to be accelerating

(1 mark)

(ii) Figure 7 below shows a set up to investigate the variation of centripetal force with radius of a circle which the body rotates

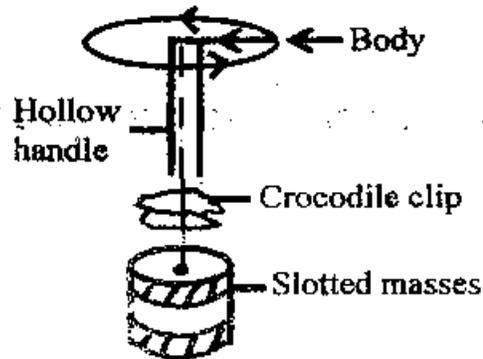


Fig. 7

Describe how the set up can be used to carry out the investigation (5 marks)

16. (a) Define:

(i) Mechanical advantage

(1 mark)

(ii) Velocity ratio

(1 mark)

(b) Figure 8 above represents a pulley system supporting a weight W. What is the velocity ratio of the system (1 mark)

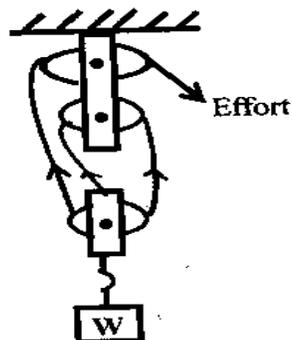


Fig 8.

(c) If the system is 80% efficient, what load can be raised by an effort of 600N
(3 marks)

(d) Using a block and a tackle, a man exerts an effort of 5000N to; pull 12m of the hauling rope through his hands in 1 minute. During this time, the load of 8,000N rises 0.6m, calculate the

(i) Velocity ratio (1 mark)

(ii) Efficiency of the system (3 marks)