

FORM 1 MIDTERM 3 EXAM

PHYSICS

NAME.....CLASS.....ADM.NO.....

1. The figure 1 below shows a measuring cylinder with a fluid to the level shown.

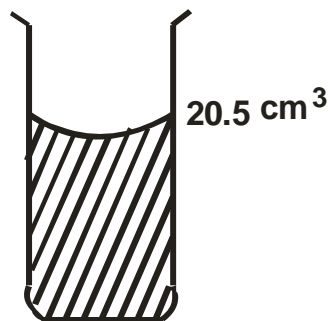


Figure 1

Find the new level when a solid of mass 13.6g and a density 1250kgm^{-3} is fully immersed into the cylinder.

(2 marks)

2. Define current and state its SI units.

(2 marks)

3. In a hydraulic press, a force of 200N is applied to a master piston of area 25cm^2 . If the press is designed to produce a force of 5000N, determine;

(a) The area of the slave piston

(2mks)

(b) The radius of the slave piston (2mks)

4. A steel needle when placed carefully on water can float. When detergent is added to the water it sinks. Explain (2mks)

5. Water is known to boil at 100°C . A student heated some water and noticed that it boiled at 101°C . State two possible reasons for this observation (2mks)

6. Explain the cause of random motion of smoke particles as observed in Brown Motion experiment using a smoke cell (3mks)

7. Name **two** types of forces that act between bodies not in contact. (2marks)

8. Convert the each of the following temperatures into Kelvin . (2 marks)

a) 25°c

b) -123°c

9. Calculate the maximum pressure a glass block of density 2.5gcm^{-3} would exert on a horizontal surface, if the block measures $20\text{cm} \times 10\text{cm} \times 5\text{cm}$. (3marks)

10. Give a reason why fish can survive under water in a pond even when the surface is frozen.

(1mark)

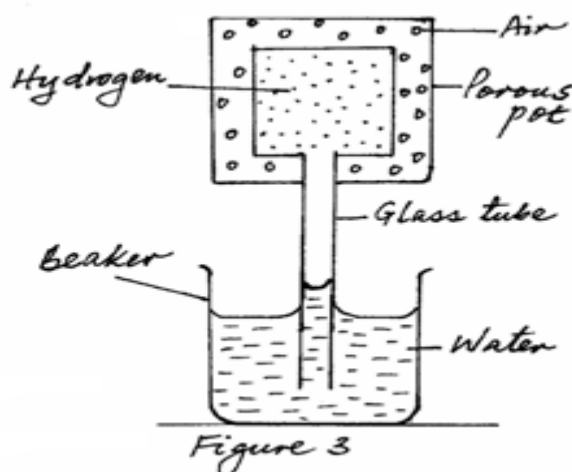
11. Give **one** advantage of alcohol over mercury as a thermometric liquid. (1mark)

12. An object weighs 49N on earth where acceleration due to gravity is 9.8N/kg. Find the acceleration due to gravity on another planet where the same object weighs 40.5N. (2 marks)

13. Give a reason why boiling water cannot be used to sterilize a clinical thermometer. (1 mark)

14. State four factors that affect thermal conductivity. (4 mks)

15. Figure 3 below shows apparatus used to compare the rates of diffusion of gases.



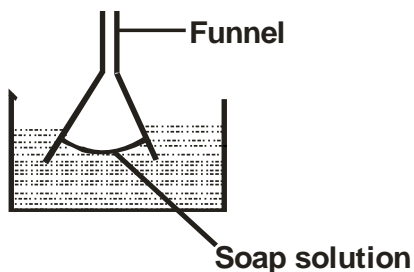
Water is observed to rise up the glass tube. Explain this observation. (2 marks)

16. The mercury column in a barometer is 760mm high. Taking the density of mercury to be 13.6g/cm³, calculate the atmospheric pressure in N/m².(2 marks)

17. a) What is surface tension?

(1 mark)

b) Figure 4 shows a funnel dipped into a liquid soap solution.



Explain what happens to the soap bubble when the funnel is removed from the soap solution. (2 marks)

18. Figure 7 shows a liquid being siphoned from a beaker to another.

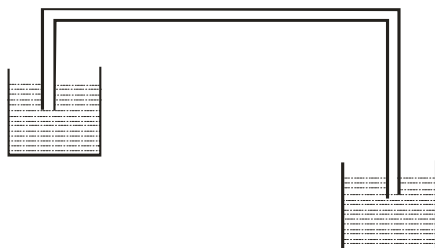


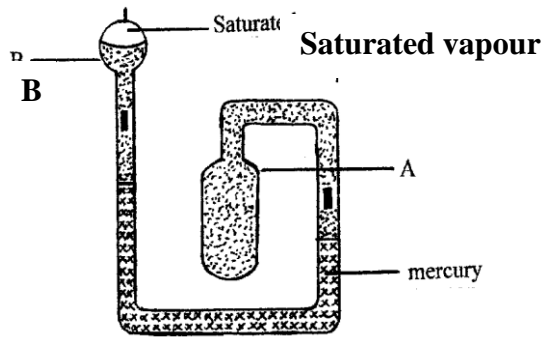
Figure 7

a) Indicate on the diagram the direction of flow of the liquid. (1 mark)

(1 mark)

b) Explain what would happen to the flow of the system if it was put in a vacuum.(2 marks)

19. The diagram below shows a six's maximum/ minimum thermometer.



A

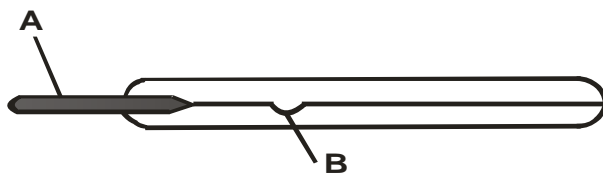
a) What is the thermometric liquid in this thermometer?

(1 mark)
Mercury

b) Explain how the thermometer indicates maximum and minimum temperature. (4 marks)

c) Indicate on the diagram the two points where the reading of the temperature shown by the thermometer can be made. (2 marks)

20. The figure below shows a clinical thermometer which is not graduated.



a) Name the parts indicated with letters A and B. (2 marks)

A

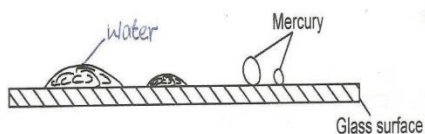
B

b) Give the range of the scale for the above thermometer. (1 mark)

21. A mercury barometer reads 760mmHg at sealevel and 700mmHg at the top of a mountain. If the density of mercury is $13,600\text{kg/m}^3$ and average density of air is 1.30kg/m^3 , calculate the height of the mountain.(3 mks)

22. In a vacuum flask, the walls enclosing the vacuum are silvered on the inside. State the reason for this.(1mk)

23. The figure below shows the shapes formed when drops of water and mercury are placed on the surface of a clean glass plate



Explain the difference in the shapes.

Explain the difference in the shapes. (2mks)

24. Explain why air is not used as a brake fluid. (1mk)

25. 20cm^3 of water is mixed with 30cm^3 of liquid L. Calculate the density of the mixture given that the density of water is 1000kg/m^3 and that of liquid L is 800kg/m^3 . (3 mks)

26. State four uses of the Electroscope (4mks)

27. An object of height 5m is placed 10m away from a pinhole camera. Calculate:

a) The size of the image if its magnification is 0.01. (2 mrks)

b) The length of the pinhole camera (2 mks)

28. What do you understand by the term temperature (1 mk)