



3. Two solid cubes have the same mass but their sides are in the ratio 4:1. What is the ratio of their densities?
- A. 1:4    B. 1:8    C. 1:16    D. 1:64
4. A cylindrical tank has a radius of 70cm and a height of 2m. The capacity in litres of this tank when full of water is
- A. 140 litres    B. 30,800 litres    C. 30,800,000litres    D. 14000litres
5. **Figure 1** shows how the extension of a copper wire varies with the applied force.



Figure 1

Point B represents

- A. Proportional limit.                      B. Elastic limit
- C. Breaking stress.                         D. Yield point.
6. A density bottle has mass 70g when empty ,90g when full of water and 94g when full of a liquid. What is the relative density of the liquid?
- A. 0.83                      B. 1.04    C. 1.5                      D. 1.2
7. The reading shown by the vernier calipper in **figure 2** below is

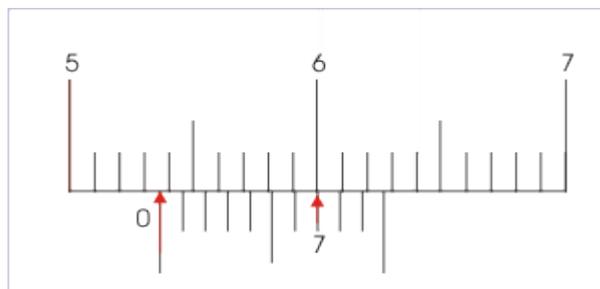
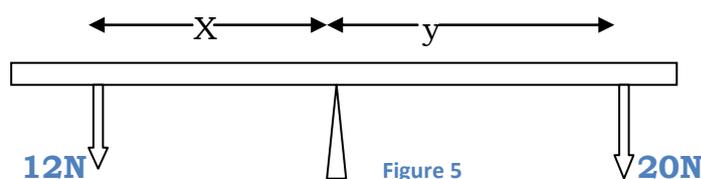


Figure 2

- A. 5.37 mm                      B. 5.47cm                      C. 5.37cm                      D. 5.07cm



13. The rate at which distance covered by a body changes with time is known as  
 A. speed B. velocity. C. acceleration D. displacement.
14. When a spring with a pointer is suspended on a retort stand the pointer position on a metre rule is 16.3cm. When 0.01N weight is hung on the spring the pointer moves to 20.3cm. What weight will cause the pointer to reach the 28.3cm mark?  
 A. 0.02N B. 0.04N C. 0.05N D. 0.03N
15. The speed with which molecules move about inside a gas depends on their  
 A. mass and temperature B. enclosure and mass  
 C. area and temperature D. volume and area
16. Which of the following has nothing to do with atmospheric pressure in its operation?  
 A. Bicycle pump. B. Syringe C. Car jack D. Lift pump
17. A boy whose weight is 600N runs up a flight of stairs 10m high in a time of 12seconds. The average power he develops in watts is  
 A. 72 B. 500 C. 720 D. 5000
18. The uniform metre rule shown in **figure 5** below is supported at its centre.



- If the rule is balanced, the possible values of  $x$  and  $y$  respectively are  
 A. 3cm and 5cm B. 5cm and 3cm  
 C. 6cm and 10cm D. 12cm and 20cm
19. Which of the following is not a store of chemical energy?  
 A. Food B. Gas C. a battery D. microphone

20. A rectangular block of wood, mass  $0.32\text{kg}$ , measuring  $10\text{cm} \times 10\text{cm} \times 5\text{cm}$  floats in a liquid of density  $1600\text{kgm}^{-3}$  with its large face horizontal. What is the height in cm of the upper face of the block above the surface of the liquid?
- A. 4.8                      B. 2.0                      C. 2.5                      D. 3.0
21. The area under a velocity-time graph gives the
- A. Distance travelled by the body.  
B. acceleration of the body.  
C. deceleration of the body.  
D. speed of the body
22. Which of the following apparatus could be used to compare densities of two liquids?
- A. Hare's apparatus                      B. Manometer  
C. Barometer                              D. Bourdon Gauge
23. In a pin hole camera, sharper and taller images are obtained by
- A. widening the hole and moving the object further.  
B. narrowing the hole and moving the object nearer.  
C. using a longer camera with a wider hole.  
D. using a shorter camera with a narrower hole.
24. A car decelerates uniformly from  $20\text{ms}^{-1}$  to  $8\text{ms}^{-1}$  in 6 seconds. Calculate the deceleration of the car?
- A.  $+72\text{ms}^{-2}$               B.  $+2\text{ms}^{-2}$               C.  $-2\text{ms}^{-2}$               D.  $5\text{ms}^{-2}$
25. Which of the following is a vector quantity?
- A. Displacement    B. Work              C. Energy    D. Pressure.

**SECTION B.**

26.(a) Define *moment of a force* and state its *SI unit*.

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(b)

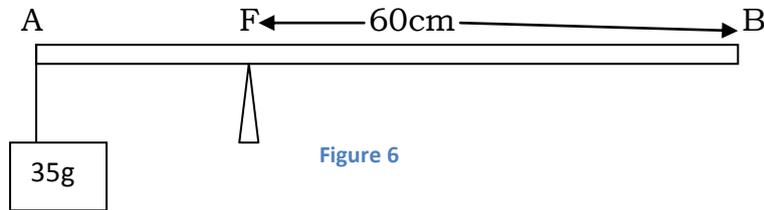


Figure 6

In **figure 6** a uniform metre rule AB balances at F when the mass at A is 35g. Calculate the weight of the metre rule.

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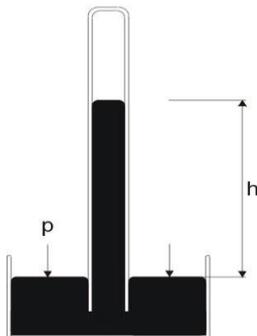
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27. The figure below shows a simple barometer. If the atmospheric pressure is  $10,200,000\text{Nm}^{-2}$  and Density of mercury =  $13,600\text{kgm}^{-3}$ ,



(i) Calculate the height h.

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(ii) Explain why mercury is used in the simple barometer and not water.

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28.(a) State two ways in which the image formed in a plane mirror differs from that formed in a pinhole camera.

(i).....  
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(ii).....  
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(b) Write down **four** properties of images formed by a plane mirror.

(i).....

(ii).....

(iii).....

(iv).....

(c ) A ray AB is incident on a mirror at an angle of  $30^\circ$ .The mirror is then rotated through an angle of  $20^\circ$ .Through what angle does the reflected ray turn?  
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29. (a) Define the terms

(i) **Focal length**

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(ii) **Principal axis**, as applied to curved mirrors.

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(b) A virtual image 6cm tall is formed 30cm behind a concave mirror of focal length 15cm. By use of an accurate scale diagram in the space below, find the position of the object and the magnification.

(use horizontal scale: 1cm → 5cm and vertical scale

1cm → 2cm)

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30. (a) Define acceleration.....

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(b) A box is released from an aircraft travelling horizontally with a constant velocity of  $200\text{ms}^{-1}$  at a height of  $500\text{m}$ . Ignoring air resistance and taking  $g = 10\text{ms}^{-2}$  find

(i) how long it takes the box to reach the ground.

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(ii) the horizontal distance covered by the object between leaving the aircraft and reaching the ground.

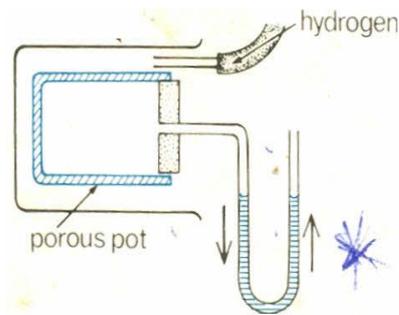
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31.(a) Define the term **Diffusion** of gases.

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(b) The diagram below shows a porous pot containing air molecules surrounded by hydrogen gas. The manometer attached to the porous pot .



(i) State what is observed.....

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(ii) explain the observation in b(i) above.....

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(iii) State and explain happens when hydrogen gas is replaced by carbon dioxide gas?

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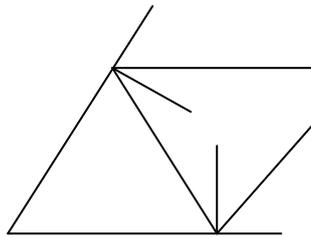
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32.(a) State the laws of reflection of light.

(i).....  
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(ii).....  
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(b) The figure below shows two plane mirrors inclined at an angle to one another.



A ray of light incident on the plane mirror m1 and parallel to the other mirror is finally reflected from mirror m2. Find the angle  $\theta$  between the mirrors.