

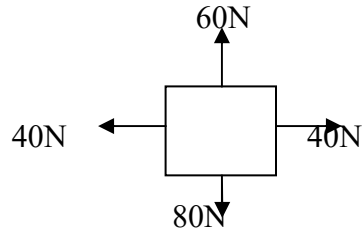
A. 11

B. 12

C. 9

D. 6

6. Figure 1 below shows forces of 80N, 40N, 60N and 40N act on a body.
Fig. 1



In which direction does the body move?

A. To the left

B. To the right

C. Downwards

D. Upwards

7. Soap is used to wash clothes because it;-
- A. Increases surface tension allowing water to penetrate the dirt more easily.
 - B. Increases capillarity in the clothes.
 - C. Reduces surface tension allowing water to penetrate the dirt more easily.
 - D. Increases capillarity in the clothes.

8. An object is placed between the focal point and the centre of curvature of a concave mirror. Which of the following fully describes the image formed?
- A. Real, inverted, magnified
 - B. Virtual, erect, magnified
 - C. Real, inverted, diminished
 - D. Real, erect, diminished.

9. Linear magnification is defined as the ratio of ;
- A. Object distance to image distance
 - B. Object height to image height
 - C. Image distance to focal length
 - D. Image height to object height

10. Soft magnetic materials are materials which;
- A. Can be magnified easily.
 - B. Can retain their magnetism for a long time
 - C. Can break easily
 - D. Cannot be attracted by a magnet.

11. Which of the following statements is NOT true about pressure in liquids?
- A. It increases with depth
 - B. It is lowest at the surface
 - C. It is the same throughout the liquid

17. A body of mass 60kg weighs 390N on planet K. Which one of the following statements is true?

- A. The mass of the body is less on earth than it is on K.
- B. The acceleration due to gravity on K is less than it is on the earth.
- C. The acceleration due to gravity on earth is less than it is on K.
- D. The mass of the body is less on K than it is on earth.

18. A straight line through the origin of a velocity time graph shows that the;

- A. Motion is a retardation
- B. Velocity is uniform
- C. The acceleration is uniform
- D. Distance is increasing uniformly

19. The three fundamental physical quantities are;-

- A. Mass, weight and force.
- B. Mass, time and metre
- C. Length, Mass and time
- D. Length, Metre and second.

20. A solid of dimensions 4m by 3m by 2m weighs 240kN. Find the pressure exerted when it rests on a horizontal surface with its smallest surface.

- A. 10 kPa
- B. 20 kPa
- C. 40 kPa
- D. 1240 kPa

21.

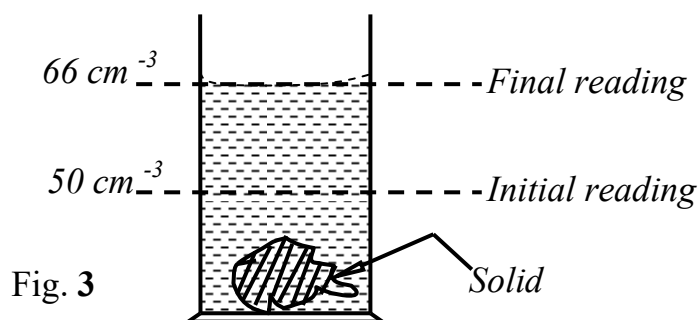


Figure 3 shows levels of water in a measuring cylinder before and after immersing a solid Y of mass 40g. Find the density of Y in kgm⁻³.

- A. 4000
- B. 2500
- C. 24000
- D. 1400

22. It is difficult to start a punching bag moving and it is difficult to stop it once it begins to move. This tendency is called its;

- A. Momentum
- B. impulse
- C. inertia
- D. mass

23. A simple machine has a velocity ratio of eight and needs an effort 10N to lift a load of 50N. What is the efficiency of the machine?
 A. 100% B. 62.5% C. 20% D. 2.5%

24. A bimetallic strip operates on the principle that metals;
 A. are heat controllers
 B. are good heat conductors
 C. have different rates of expansion
 D. have the same rate of expansion

25. A box of mass 80kg is tied at one end of a uniform piece of timber resting on two supports 1m from each end as shown below.

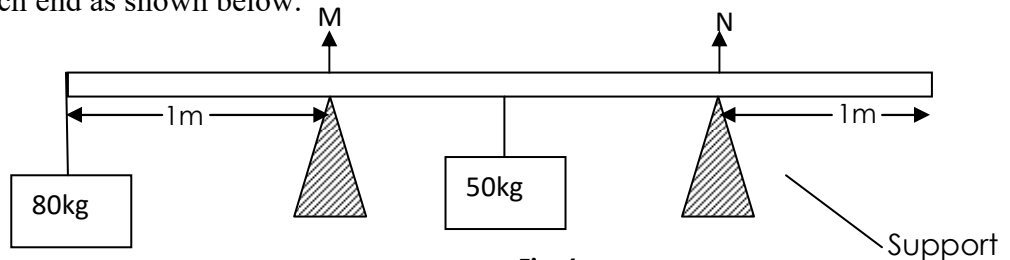


Fig.4

If the piece of timber is 10m long and has a mass of 50kg. Find the force on each support.

	M	N
A	1150N	150N
B	800N	500N
C	150N	1150N
D	200N	1200N

- 26.

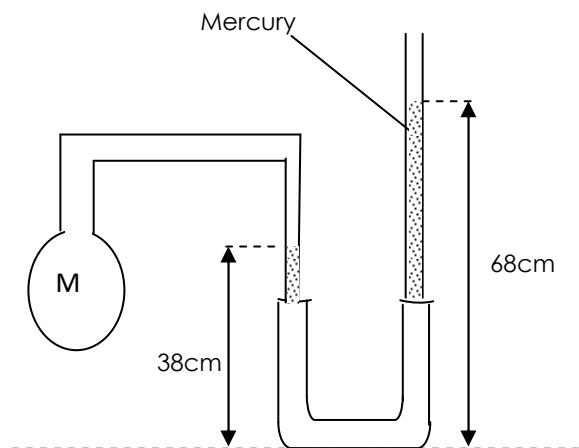


Fig. 5

In the figure 5 above, a fixed mass of dry gas is trapped in bulb M. Determine the total pressure of the gas in M, given that the atmospheric pressure is 760mm of mercury.

- A. 114cm Hg
C. 30cm Hg
- B. 106cm Hg
D. 46cm Hg

27. Which of the following are reasons why water is not a good thermometric liquid?

- (i) it expands irregularly
(ii) it is a poor conductor of heat
(iii) it wets glass

- A. (i), (ii) and (iii)
C. (i) and (iii) only
- B. (ii) and (iii) only
D. (i) and (ii) only

28. The stability of a body may be increased by?

- (i) Raising its centre of gravity
(ii) Lowering its centre of gravity
(iii) Making its base narrow
(iv) Making its base wide.

- A. (i) and (iv) only
C. (i) and (iii) only
- B. (ii) and (iv) only
D. (ii) and (iii) only

29. The eclipse of the sun takes place when the shadow of the

- A. earth falls on the moon
C. moon falls on the sun
- B. sun falls on the moon
D. moon falls on the earth

30. A stone of mass 100g rests at a point 10m high. If its released from its position of rest, its kinetic energy just before landing will be;

- A. 100J
B. 10J
C. 0.1J
D. 1000J

31. A sensitive thermometer is one which

- A. is sensitive to heat
B. can record big changes in temperature
C. can record small changes in temperature
D. has a large bore

32. A ticker timer is connected to the mains – supply of frequency 50HZ. Find the time it takes to print five consecutive dots.

- A. 0.08s
B. 250s
C. 10s
D. 0.10s

33. In the crushing can experiment, the can collapses because
- A. It is weakened by the hot water
 - B. Pressure outside is greater than pressure inside
 - C. Pressure inside is greater than pressure outside
 - D. Pressure inside is atmospheric.
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34. Which one of the following is true about the periodic time in a simple pendulum?
- A. It is independent of the length of the string.
 - B. It increases with the length of the string.
 - C. It increases with mass of the bob
 - D. It is independent of amplitude.
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35. A body starts from rest and accelerated uniformly at a rate of 8ms^{-2} . Find the time it takes to cover a distance of 100m.
- A. 5.0s
 - B. 25.0s
 - C. 12.5s
 - D. 3.5s
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36. The area between a velocity-time graph and the time axis for a moving body represents
- A. distance
 - B. acceleration
 - C. momentum
 - D. velocity.
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37. A school nurse applies a force of 30N to a syringe. Given that the cross sectional area of the tip of the needle is $1.0 \times 10^{-7}\text{m}^2$. Calculate the pressure produced at the tip of the needle.
- A. $3.0 \times 10^7 \text{ Pa}$
 - B. $4.0 \times 10^7 \text{ Pa}$
 - C. $3.0 \times 10^8 \text{ Pa}$
 - D. $2.5 \times 10^8 \text{ Pa}$
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38. A tank 2m tall and base area of 2.5 m^2 is filled to the brim with a liquid which exerts a force of 40000 N at the bottom. Calculate the density of the liquid.
- A. $\frac{4000}{25 \times 2 \times 20} \text{ kg m}^{-3}$
 - B. $\frac{40000}{2.5 \times 2 \times 10} \text{ kg m}^{-3}$
 - C. $\frac{40000}{25 \times 2 \times 10} \text{ kg m}^{-3}$
 - D. $\frac{40000}{2.5 \times 2} \text{ kg m}^{-3}$
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39. The stability of a bus is reduced when a heavy load is placed on its roof rack because;
- A. the total weight is increased.
 - B. the pressure upon the tyres is increased.
 - C. the maximum speed is reduced.
 - D. the centre of gravity is raised.

40. The reason why black layers are used in a solar heating system is because they are.
- A. Bad emitters of heat.
 - B. Bad absorbers of heat
 - C. Good absorbers of heat
 - D. Good reflectors of heat

SECTION B.

41. (a) State the principle of moments. (1 mark)

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- (b) Three forces act on a uniform rod as shown in figure 6.

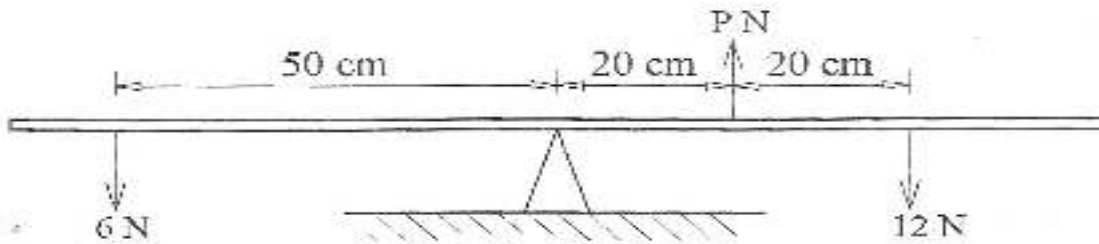


Fig. 6 If the rod balances horizontally, determine the value of P. (3 marks)

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42. (a) Define the terms;

(i) *magnetic saturation*

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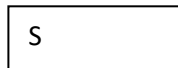
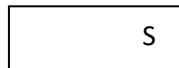
(ii) *magnetic field*

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(iii) *neutral point*

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(b) Draw the magnetic field pattern for the magnets below.



43. (a) Define a Joule.

(01mark)

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- (b) A stone of mass 500g is thrown vertically upwards with a velocity of 15ms^{-1} . Calculate the potential energy at the greatest height. (3 marks)

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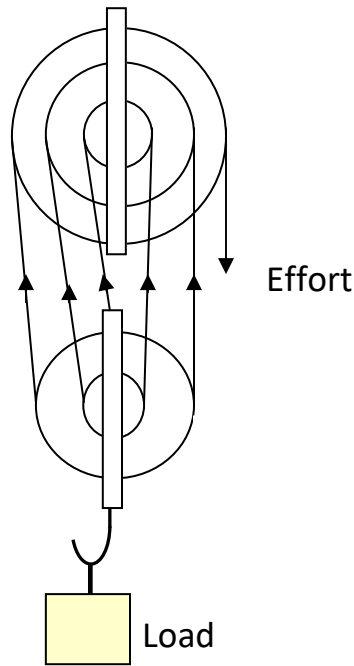
44. (a) Define the term efficiency of a machine. (1 mark)

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(b)



The block and tackle pulley system above has an efficiency of 80%. Calculate the load which it can be lifted by an effort of 10 N. (3 marks)

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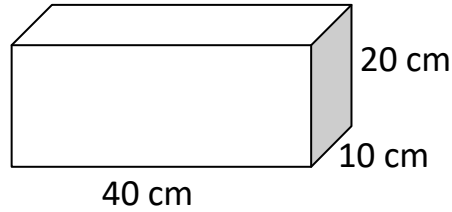
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45. (a) State **Archimedes's principle**. (1 mark)

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(b)



The figure 7 above shows a block made of a material whose density is 1250 kg m^{-3} and it measures $10 \text{ cm} \times 20 \text{ cm} \times 40 \text{ cm}$. Find;

(i) the mass of the block. (2 marks)

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(ii) the maximum pressure it exerts. (1 mark)

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46. (a) A person of mass 65 climbs up a ladder of height 8m in 10 seconds. Calculate the;

(i) work done (0 1 1/2 marks)

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(ii) power developed (01½ marks)

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(b) State **two** forms of energy received directly from the sun. (02 marks)

(i):

(ii):

47. (a) Define the term **velocity**. (1 mark)

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(b) A car moving with a uniform velocity of 30ms^{-1} accelerates uniformly to 65ms^{-1} in 30minutes. Calculate the distance it covers in this time. (3marks)

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48. (a) Define acceleration. (1mark)

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(b) Figure below shows a section of a tape used to study the motion of a body. The timer used has a frequency of 50Hz.

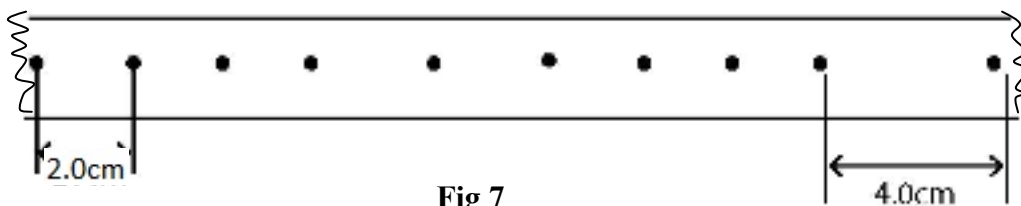


Fig 7

Determine the acceleration of the body.

(3marks)

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49. (a) State any one assumption made when calculating the thickness of an oil molecule.

(1mark)

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(b) 0.01cm^3 of an oil drop forms a film of radius 2cm on the surface of water.
Determine the thickness of the molecule.

(3 marks)

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50. (i) State Pascal's principle of transmission of pressure.

(1 mark)

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(ii) State one assumption made in Pascal's principle.

($\frac{1}{2}$ mark)

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(b) The diagram in figure 9 shows the structure of a fore pump.

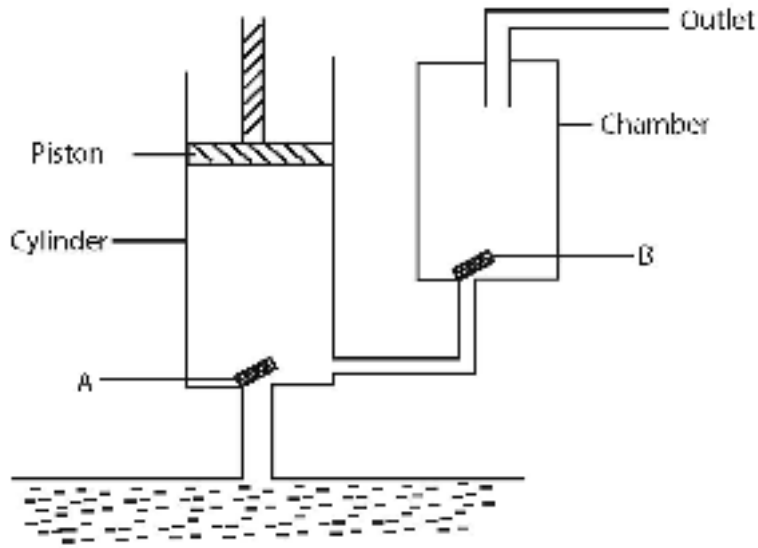


Fig 8

Outline what happens when the piston move downwards.

(2marks)

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END.