

SEROMA CHRISTIAN HIGH SCHOOL MUKONO

HOME ASSESMENT II 2021

S.2 PHYSICS

Time Allowed: 2 Hours

INSTRUCTIONS: Attempt all questions the three sections A, B and

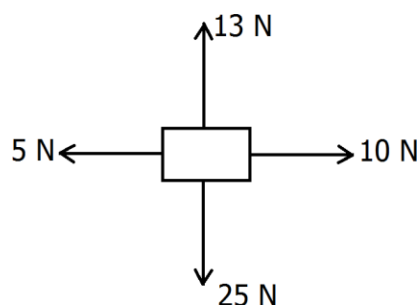
C. Where necessary, take $g = 10 \text{ ms}^{-2}$

(Write the correct alternatives of the questions 1 to 20 in the table below.)

1		6.		11.		16	
2		7.		12.		17	
3		8.		13.		18	
4		9.		14.		19	
5		10		15.		20	

SECTION A

- Which of the following instruments measures the weight of an object
 - Spring balance
 - Beam balance
 - Top pan balance
 - Density bottle.
- Which of the following does not apply to atmospheric pressure to its operations?
 - Bicycle pump
 - Siphon
 - Beam balance
 - Drinking straw
- The forces of magnitude 13N, 25N, 10N and 5N act on a body as shown below, calculate the resultant force.

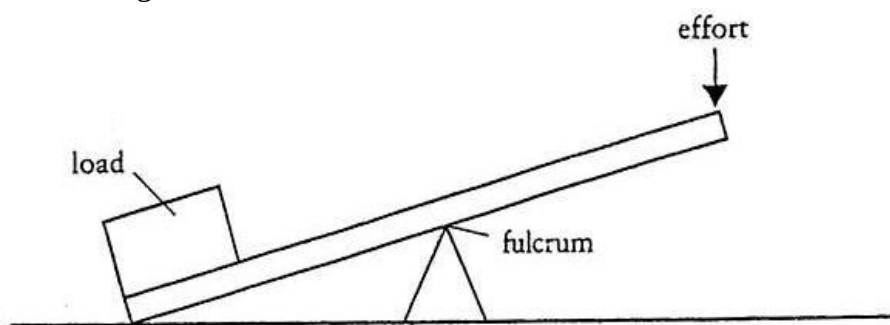


- 12N
 - 13N
 - 17N
 - 10N.
- Which class of lever is the bottle opener shown below?



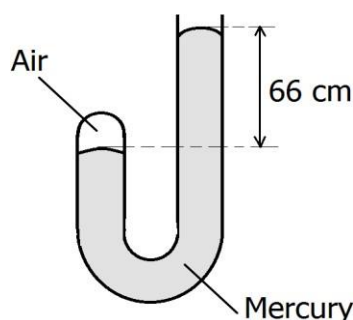
- First
- second
- Third
- Fourth

5. The diagram below shows a simple lever. How can the load be lifted more easily without increasing the effort?



- A. Move the load further from the fulcrum.
 B. Move the fulcrum nearer the effort.
 C. Apply a larger wedge and raise the fulcrum but keeping it in the same position.
 D. Move the load nearer to the fulcrum
6. What type of equilibrium does a spherical marble placed on a smooth table have?
 A. Neutral equilibrium B. Unstable equilibrium
 C. Stable equilibrium D. None of the above.
7. When water spreads on a glass plate, the forces between its molecules and glass molecules are due to
 A. surface tension B. adhesion
 C. cohesion D. capillarity
8. A bus carrying a heavy load on its rack is more unstable when moving because
 A. its centre of gravity is raised.
 B. the friction on the ground increases.
 C. its total weight is increased.
 D. its centre of gravity is lowered.

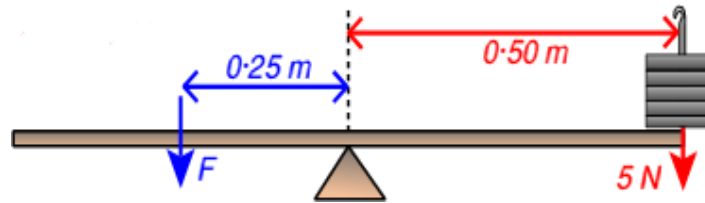
9.



The diagram in figure 1 shows air trapped by a column of mercury in a J-tube. The atmospheric pressure is 76cmHg. At what pressure is the enclosed air?

- A. 10cm Hg B. 66cm Hg C. 76cmHg D. 142cmHg

10. The diagram below shows a wooden rod balanced on a knife edge. Find the unknown force.



- A. 2.5 N B. 10 N C. 2 N D. 20 N
11. A Newton is defined as the
- A. units of force
 - B. force which produces an acceleration of 1 ms^{-2}
 - C. force which gives a mass of 1 kg on acceleration of 1 ms^{-2}
 - D. force which gives any mass on acceleration of 1 ms^{-2}
12. A material that can be rolled into sheets or drawn into wires without breaking is said to be
- A. Strong
 - B. Elastic
 - C. Ductile
 - D. Brittle
13. Radiation is the transfer of heat
- A. in a liquid which involves the movement of the molecules
 - B. from one place to another by means of electromagnetic waves.
 - C. through a material medium without the bulk movement of the medium.
 - D. through a fluid which involves the bulk movement of the fluid itself.
14. A rectangular metal has a weight of 3 N and measures $2\text{ m} \times 3\text{ m} \times 4\text{ m}$. What is the greatest pressure that it can exert on a horizontal surface?
- A. $5.0 \times 10^3\text{ Nm}^{-2}$
 - B. $3.75 \times 10^3\text{ Nm}^{-2}$
 - C. $2.5 \times 10^2\text{ Nm}^{-2}$
 - D. $7.5 \times 10^3\text{ Nm}^{-2}$
15. Which one of the following is not a property of the image of an object placed 10 cm in front of a plane mirror?
- A. Its behind the mirror
 - B. Its 10 cm from the mirror
 - C. Its laterally inverted
 - D. Its real

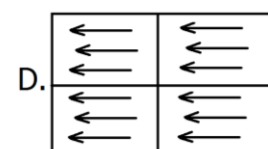
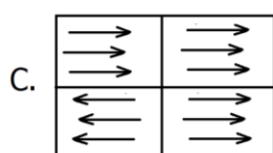
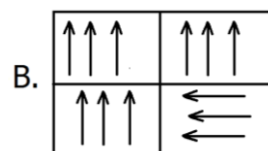
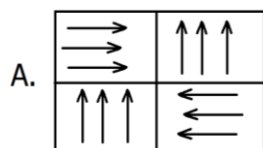
16. Surface tension in a liquid may be weakened by

- A. Lowering the temperature
- B. Adding soap solution
- C. Increasing the amount of the liquid
- D. Increasing the density of the liquid

17. When potassium dichromate dissolves at the bottom of a water container, it spreads slowly throughout the water by a process called

- A. Evaporation
- B. Diffusion
- C. Capillarity
- D. Convection

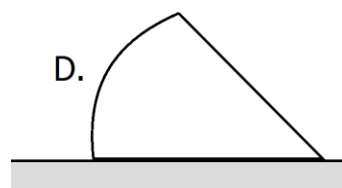
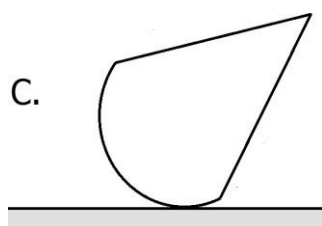
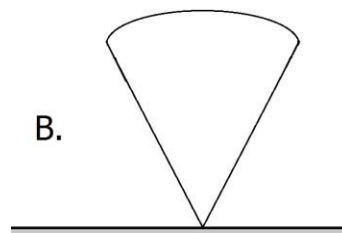
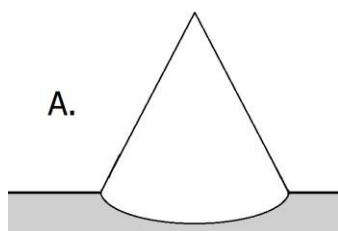
18. Which of the following diagrams shows magnetic saturation?



19. When does the eclipse of the moon (lunar eclipse) occur?

- A. When the moon is between the sun and the earth
- B. When the earth is between the sun and the moon
- C. When the sun is totally eclipsed by the moon
- D. When a bright ring of sunlight shows around the edge of the moon

20. Which of the following shows a cone in neutral equilibrium?



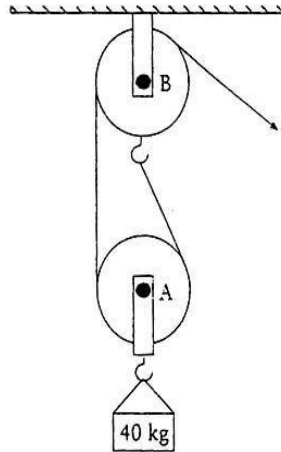
SECTION B

- 21.(a) Define the term velocity ratio of a machine. (1 mark)

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- (b) (i) The diagram below shows a pulley system carrying a 40kg object.



- (ii) If the efficiency of this pulley system is 75%, find the effort applied to it to lift the load. (3 marks)

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22. Explain why

- (i) Diffusion occurs more quickly in a gas than in a liquid. (1 mark)

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- (ii) A small needle may be floated on the surface of water but if a drop of detergent is added to the water the needle sinks. (1 mark)

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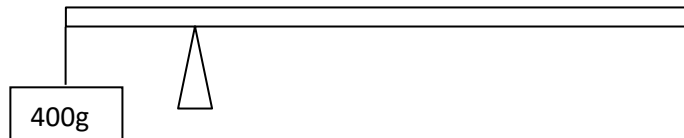
- _____
- _____
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- [illegible]

- _____
- _____
- _____

-
- 400g



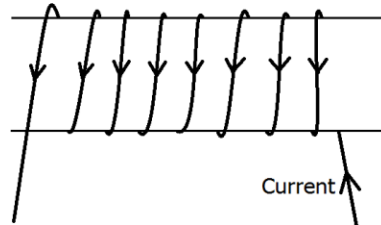
24.(a) What is a magnetic field?

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b)



The figure above shows current in a solenoid.
Sketch the magnetic field around the solenoid, clearly indicating the polarities. (3 marks)

25. (a) Distinguish between cohesion and adhesion. (2 marks)

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(b) Sketch diagrams to show the level of liquid in a capillary tube that is immersed in a liquid which has greater:

(i) cohesion than adhesion (01 mark)

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(ii) adhesion than cohesion (01 mark)

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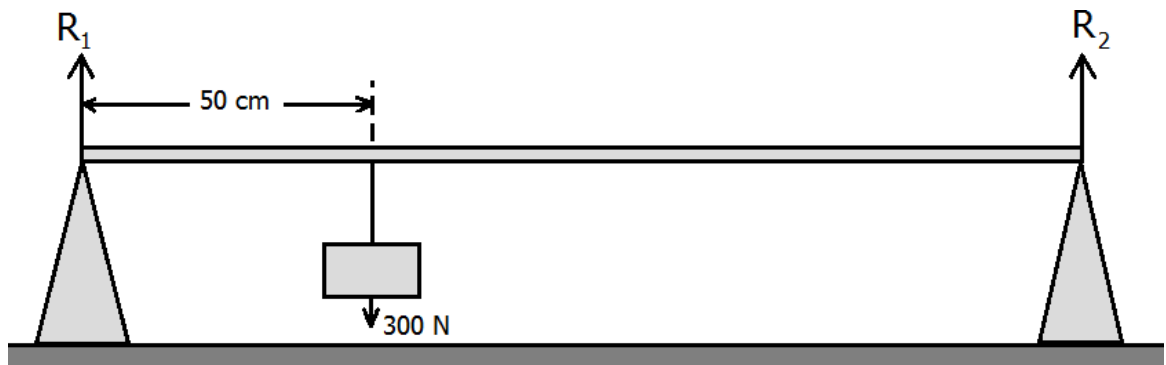
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SECTION C

1. (a) Describe how you would measure the mass of a uniform meter rule using a known mass and a knife edge. (5 marks)
 - (b) In a pulley system, the distance moved by the effort is five times the distance moved by the load. Calculate the efficiency of the system if an effort required to just move a load of 60 N is 20 N . (3 marks)
 - (c) Draw a block and tackle pulley system having three pulleys on the fixed block and two pulleys on the movable block and state the velocity ratio of the system. (2 marks)
2. (a) Define moment of a force. (1 mark)
 - (b)



The figure above shows a uniform pole AB of length 2m and weight 50 N supported at the ends A and B. A load of weight 300 N is suspended at a point 50 cm from A.

Calculate the reaction forces R_1 and R_2 at the supports. (5 marks)

- (d) (i) Explain what is meant by unstable equilibrium. (2 marks)
- (ii) State two ways of increasing the stability of a body. (2 marks)

END

Heads and not tails