S.3 END OF YEAR EXAMINATION

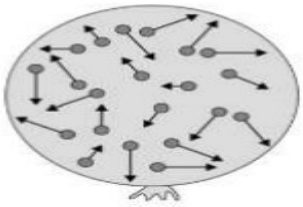
UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION

PHYSICS (2 HOURS)

INSTRUCTIONS: attempt ALL questions in A and in section B

SECTION A

1. The figure below shows a gas filled in a balloon



a) What theory is linked to the above figure :……(1 mk)

b) Explain what will happen to gas and/or balloon if it is placed in cold water?

……

…… (2 mks)

c) The helium in the balloon has a mass of 0.00254 kg. The balloon has a volume of 0.0141 m3. Calculate the density of gas. Choose the correct unit from the box

M^3Kg^{-1}	Kgm^3	Kgm^{-3}

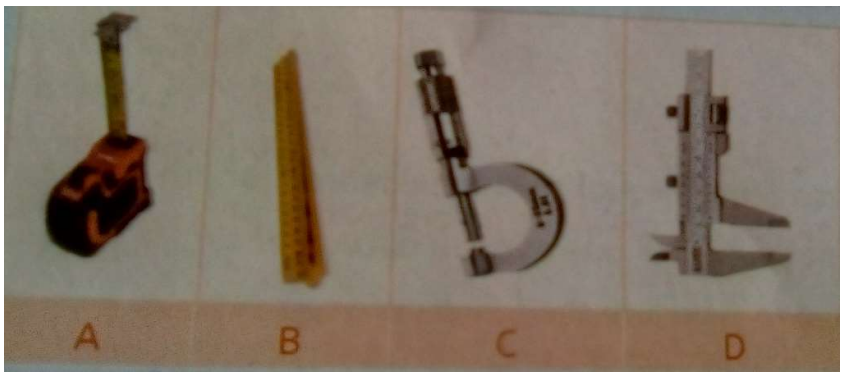
Calculate the Density of gas.

……

……

……(3 mks)

2. Look at the figure below, what do they measure in common



Name the following instruments

A…… B……

C…… D…… (4 mks)

b) The engineer said the road to construct of a distance of 30Km. In physics it's said to be a scalar quantity why is it? (1 mk)

……

c) Jupiter on 27th /September/2022 was close to earth at a distance of 590.6 million Km. the closest in Almost 60 years

In standard form what is Jupiter is Distance from the Sun in kilometres? (1mk)

……

Find the volume of Jupiter given the above information

……

……

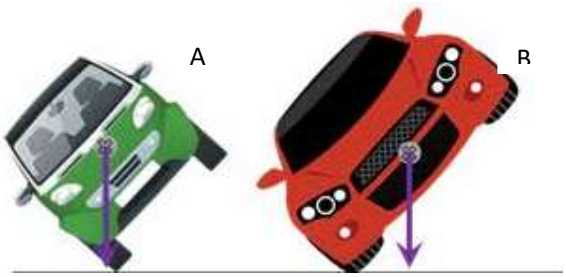
……(3 mks)

3. What is centre of gravity of a body?

……

……(1 mk)

The diagram below shows cars A and B positions trying to pass through a junction (corner)?

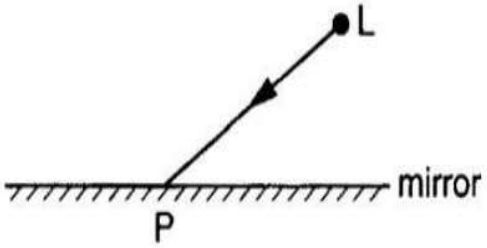


Which of the two cars is likely to overturn and explain why it does so? (2mks)

……

……

4.The figure shows a view from above of a vertical mirror . a small lamp is plaed at the point marked L.



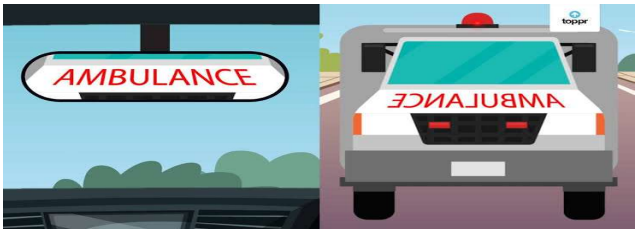
a) One ray, LP, from the lamp has been drawn
At P, draw and label the normal to the mirror
At P, draw and label the reflected ray. (2 mks)

b) Mark, using i and r for each of the angles formed and state the law of reflection as applied to angles. (1 mk)

……

……

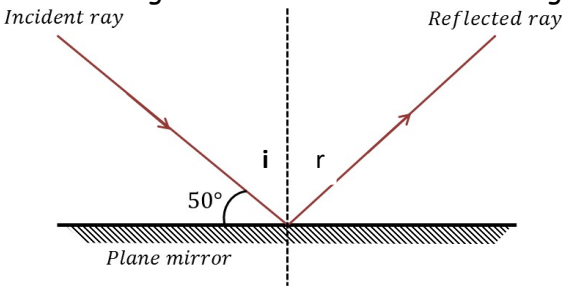
c) Which property of mirrors is being applied to the picture below (1mk)



……

……

d) Find the angles i and r as shown in the diagram below



(3mks)

5. The figure below show an image of a hot sauce pan with food

a)Name any two processes of heat transfer seen in the picture above (2mk)

……

……

b)How would you reduce heat loss to the surrounding to enable it cook faster?

……

…… (1mk)

c)Which material is used as the handle and why is it used ?

……

…… (2mks)

6 In **Figure 7** the liquid thread is shown along the edge of the scale marks. This is the recommended way to position the liquid thread before reading a temperature. In **Figure 8** the thread is positioned away from the edge of the scale.

figure 8

Suggest a reason for the recommended way to use a thermometer. 2mks

……

……

……

(c) Three students had an argument on how the lower fixed point can be determined, as a physics student describe with the aid of a diagram the proper way of determining the lower fixed point.

4mks

……

……

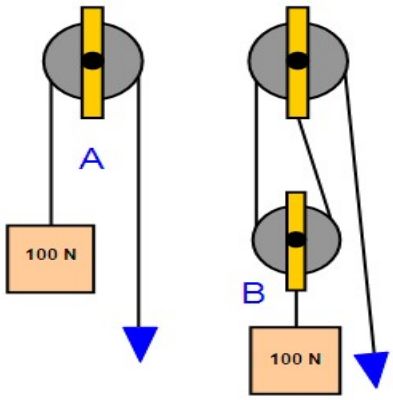
……

……

……

……

7. From the figure below answer the questions that follow.



Name the pulley system as shown on the side

A……

B…… (2mks)

Which of the pulley systems is more preferable and explain why?

……

……

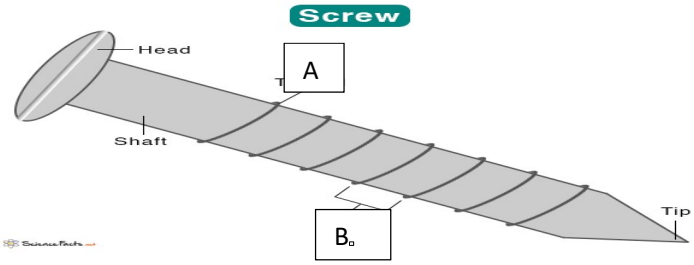
……(2mks)

Section B

8. a)Define the following terms as used in simple machines?

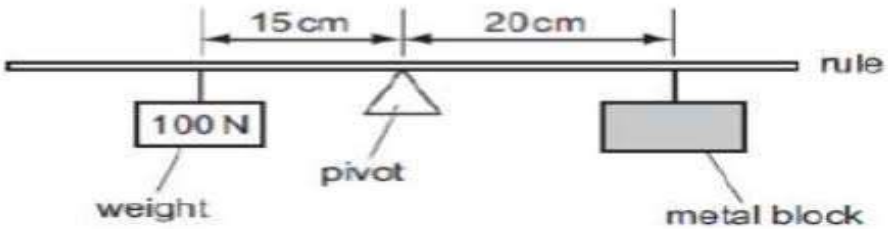
i. Mechanical advantage
ii. Velocity ratio (2mks)

b) A screw system is being used to lift a load of 8000N. If the mechanical advantage is 300 and efficiency of the system is 40%.



i. Name the parts A and B of the screw. (2mks)
ii. Find the effort and velocity ratio (4mks)

c) study the figure below show answer questions that follow



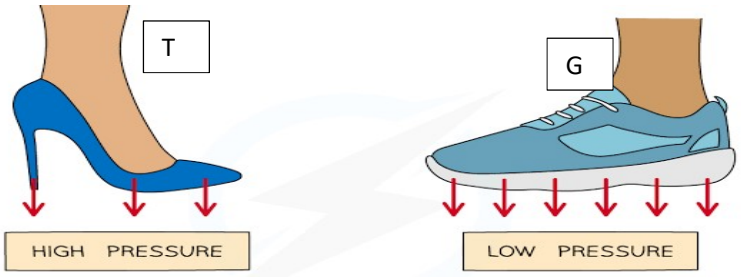
i. The above systems works on a principle of moments, state the mentioned principle.

ii. Using the principle from part one find the weight of the metal block (4 mks)

iii. Which of the wrenches will be easier to use and explain why?

(2mks)

9. a) Define pressure and state its unit (2mks)

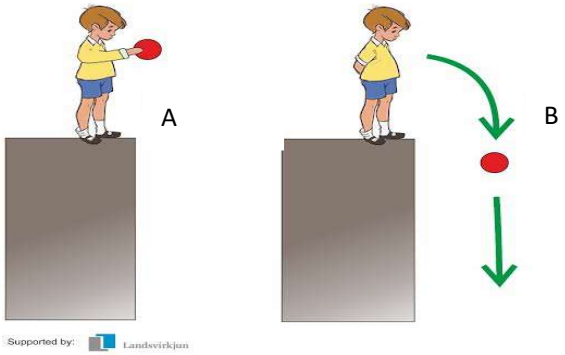


b) From the figure above. Which of the shoes is more convenient to work with on soft ground and explain why it is so? (2mks)

c) Consider a rectangular block of weight 100N measuring 1.0m by 0.5m by 0.2m. Find the

i. Maximum pressure
ii. Minimum pressure (4mks)

d)



i) Define the energy possessed by the bodies in A and B. (4 mks)
ii) Name the two types of energy sources with two examples for each (3 mks)