# KENYA NATIONAL EXAMINATION COUNCIL
# REVISION MOCK EXAMS 2016
## TOP NATIONAL SCHOOLS

**MANG'U HIGH SCHOOL**
**232/1**
**PHYSICS**
**PAPER 1**

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# MANG'U HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

**232/1**
**PHYSICS**
**PAPER 1**

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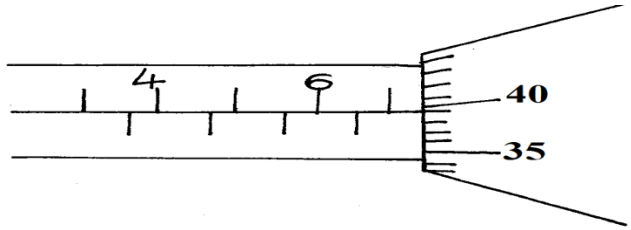
**SECTION A (25 MARKS)**

***Answer All the questions in this section in the spaces provided after each question.***

1 The micromer scewguage shown had an error of – 0.03mm and was used to measure the diameter of a ball bearing.




Find the radius of the ball bearing whose diameter is recorded by the instrument(2mks)

2 State **two** properties of a liquid that is considered during the construction of a liquid – in – glass thermometer. (2mks)

3 Explain why steel is selected as a better material for reinforcement for a concrete beam. (1mk)

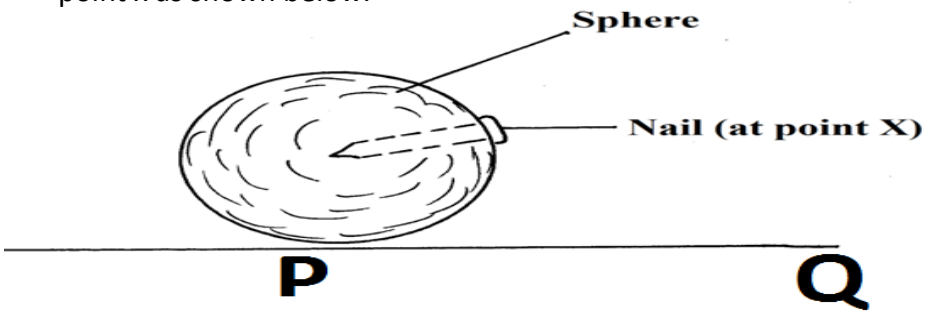
4 Water tanks supplying showers and taps in a house are erected as high as possible.Exaplain. (2mks)

5 Explain why a dead dog thrown next to school smells so much during the day than during cold morning. (1mk)

6 Pure water at $0^0$C is heated upto $10^0$C sketch the graph its volume against temperature on the axis given below. (2mks)

7 State **one** limitation of the gas law. (1mk)

8 The figure below shows a homogenious wooden sphere with a nail driven or hammered into it at a point x as shown below.

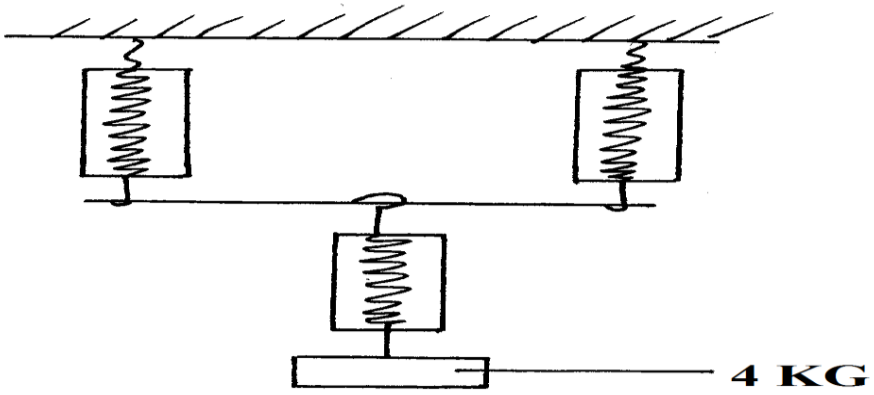



The sphere is allowed to roll after a little push on it. On what position will it settle along the plane PQ.Give a reason for your answer. (2mks)

9 A drop of oil has a volume of $3.0 \times 10^{-6} m^3$ and spreads to form a patch of radius 16cm on the surface of water. Determine the thickness of the oil patch. (3mks)

10 A ball is kicked from a table top horizontally so that it moves and fall some distance on the horizontal ground 65cm away from the base of the table. If the table is a half a metre tall, calculate the initial horizontal velocity of the ball. (3mks)

11 Three identical spring balances of spring constant 40N/M and weight 0.5N are used to support a load as shown. Determine the total extension of the system. (3mks)




12 Curtains on the doors and windows are seen to bulge or hang outwards when there is a wind blowing across them. Explain this phenomenon. (2mks)

13 The temperature of a cold drink from a fridge was found to be 261kelvin.What temperature would this be in degrees centigrade. (1mk)

**SECTION B (55MARKS)**

***Answer All the questions in this section in the spaces provided after each question.***

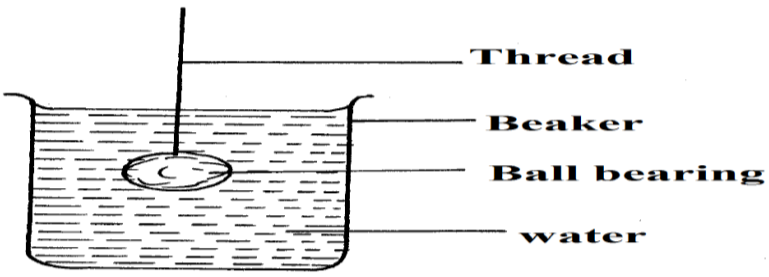
14 a) State the Archimade's principle. (1mk)

b) The reading on a spring balance is 7.2N when a metal ball bearing is hung from its lower end in air the density of the metal is $9.00 g/cm^{-3}$ and that of water is $1.00 g/cm^{-3}$.The ball is immersed in water in a Eureka can until it is completely submerged. (3mks)

i) What is the volume in $m^3$ of water displaced.

ii) What is the reading of the spring balance in N when the ball is completely submerged in water. (3mks)

c) Using the model below show all the forces that are acting on the metal ball bearing as it moves through the water (indicate with arrows). (3mks)



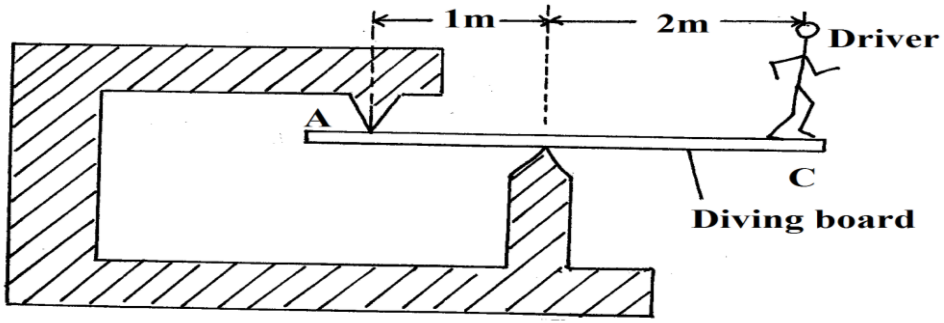

15 a) Name the two necessary conditions for a body to be in equilibrium.(2mks)

b) The handle of a door is fitted furthest from the hinoes during its assembly for easy operation. Explain this. (2mks)

c) If the handle were to be at 75cm from the hingers and a force of 70N were applied on it to open the door, determine the moment of force that would be experienced. (3mks)

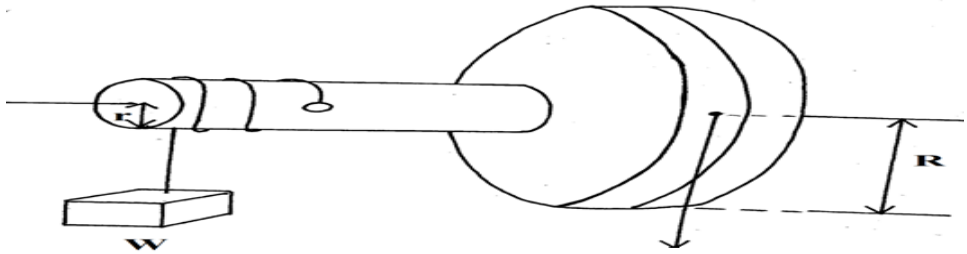
d) Explain what is meant by a uniform beam in equilibrium. (2mks)

e) The figure below shows a simple form of a driving board.




The diver has a mass of 60kg.Calculate the magnitude and show the direction of the force acting at A if the board is uniform and has a mass of 20kg.(3mks)

16 a) The following figure shows a wheel and axle used to raise a load W by applying an effort,F.The radius of the large wheel is R and that of the small wheel is r.




i) Show that the velocity ratio (V.R) of the machine is given by $^{R}/_{r}$(2mks)

ii) Given that r = 8cm and 2R = 20cm,determine the effort required to raise a load of 40N if the efficiency of the system is 85%. (4mks)

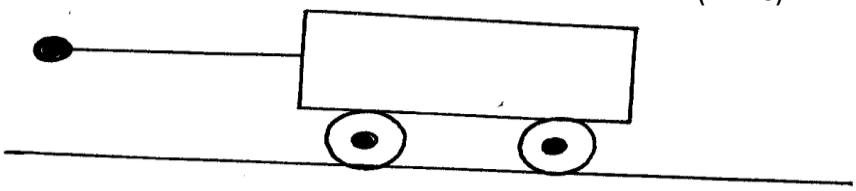
b) i) Give **two** examples of renewable sources of energy. (2mks)

ii) Distinguish between work and effort. (2mks)

17 a) An object which is moving over a horizontal surface does not continue its motion with a constant acceleration when the acceleration force is discontinued. The motion decays to zero finally. Explain what is responsible for this observation. (2mks)

b) A trolley of mass 5.00kg resets on a plain horizontal ground shown in the figure below.

i) On the sketch below show the forces acting on it when pulled in one direction (4mks)



ii) When trolley is pulled with a horizontal force of 24N, the trolley accelerates at 3ms$^{-2}$.Find the frictional force acting on the trolley(3mks)

c) An automobile of mass 500kilograms is accelerated from rest a long a horizontal surface. The force produced by the engine is 300N and that due to friction is 50N.What is the accelerating force and what is the acceleration produced(3mks)

18 a) State what is meant by streamline flow. (1mk)

b) The figure below shows a cross-section of an aeroplane wing (aerofoil) with the aeroplane moving in the direction shown by the arrow.

i) Sketch treamline to show how air flows past the wing as the aeroplane move. (1mk)

ii) Explain how dynamic lift of the aeroplane is caused by the wing.(2mks)

c) i) Write down the expression for the equation of continuity and explain its components. (2mks)

ii) Explain how air is drawn into the barrel of a Bunsen burner when the gas supply is opened. (2mks)

d) A water pipe of diameter 5.2cm is connected to another pipe of diameter 1.3cm.The speed of the water in the smaller pipe is $3ms^{-1}$.What is the speed of the water in the larger pipe. (3mks)