**DARAJANI SECONDARY SCHOOL,**

**P.O. BOX 20-90129, NGWATA.**

**MID\_TERM 2, 2015\_ EXAMINATION**

**FORM 2**

**PHYSICS**

**TIME: 2HRS**

**NAME…………………………………………………………………………………………ADM. NO……………….. CLASS: ………….**

1. (a) State the law of electrostatic charges. (1 mark)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) State how the following defects in a simple cell can be minimized. (2 marks)

(i) Polarization

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(ii) Local action

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) The vernier caliper shown has a zero error of -0.05.

What reading is indicated by the instrument? (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) The figure below shows two micrometers used to measure the diameters of a ball bearings. Record the diameter of each ball bearing.

1. (a) State two assumptions made when estimating the size of an oil molecule in the oil drop experiment. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) An oil drop of average diameter 0.7mm spreads out into a roughly circular patch of diameter 70cm on the surface of water in a trough. Calculate:-

(i) the volume of oil drop. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(ii) the area of the patch covered by the oil. (2 marks)

(iii) the diameter of the oil molecule. (2 marks)

1. A cuboid has dimensions 12cm x 10cm x 15cm, its weight is 72N. Determine the density of the material, the cuboid is made of. Express your answer in kg/m3. (3 marks)
2. (a) Give two properties of magnets. (2 marks)

(b) The figure below shows two pins hanging from a magnet.

S

N

Explain why they do not hang vertically downwards. (2 marks)

(c) The figure below shows a method of making a magnet.

S

N

X

Y

Iron bar

1. Name the method accurately. (2 marks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

1. Identify the polarity of x and y. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) State clock rule as used in magnetism. (1 mark)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) The figure below shows a bar magnet with a nail attracted to it on one side. Close to it is a soft iron bar with current carrying wire wound around on it.

Magnet X

 **N** Y y

Nail

 **S** Y y

**S**

Identify the poles marked x and y. (2 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) Define the term demagnetization and state two methods of doing it. (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) State the principle of moment. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) The figure below shows a uniform metre rule of weight 1.0N pivoted at the centre.

 **10 20 30 40 50cm 60 70 80 90**

 **I I I I I I I I**

2N

Where should the 6.0N body be so that the rule balances? (3 marks)

(c) A uniform metre rule of mass 150g is pivoted at the 0cm mark. What force applied vertically at the 60cm mark is needed to maintain the rule horizontally? (3 marks)

(d) The figure below shows uniform bar balanced about its centre by different forces. Calculate the distance *d*. (3 marks)

10cm

2cm

4cm

*d*

5N

4.6N

1.8N

4.2N

1. Determine the number of images formed when the plane mirrors are inclined at 50oC to each other. (2 marks)
2. Dust particles are seen to move in random manner when a beam of light is shone in a dusty room. Explain what causes the movement. (2 marks)
3. 180cm3 of fresh water of density 1000kgm-3 is mixed with 2200cm3 of sea water of density 1025kg/M-3. Calculate the density of the mixture. (5 marks)
4. Water wets clean surface of glass but not waxed ones. Explain. (2 marks)
5. A suspended plane mirror makes an angle of 20oC with a wall as shown below light from a window strikes the mirror horizontally. Find :-

20o

Incident ray

Horizontal ground

1. The angle of incidence. (2 marks)
2. The angle between the horizontal and reflected ray. (1 mark)
3. You are provided with two dry cells, a switch and two bulbs. Draw a possible circuit diagram for the arrangement that will allow to switch on the two lights simultaneously. (2 marks)
4. A student in a place where the mercury barometer reads 75cm wanted to make an alcohol barometer. If alcohol has a density of 800kg/m3, what is the minimum length of the tube that could be used? (3 marks)
5. When a body is immersed in a fluid, it appears to weigh less. What force is responsible for this observation? (1 mark)
6. The figure below shows a u-tube filled with water, mercury and another liquid.
7. Determine the density of liquid. (3 marks)
8. Name two factors that affect pressure in liquids. (2 marks)