**DARAJANI SECONDARY SCHOOL,**

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

**MID-TERM 2, 2015\_ EXAMINATION**

**FORM 1**

**PHYSICS**

**TIME: 2HRS**

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

1. Differentiate between a fundamental quantity and a derived quantity and give an example of each. (4 marks)
2. A beaker of radius 5cm contains water to a height of 10cm.
3. What is the volume of the water in the beaker? (take pie = 3.142) (2 marks)
4. When a stone is completely immersed in the beaker, water rises to a height of 19cm. What is the volume of the stone? (3 marks)
5. A wheel of a car rotating uniformly makes 400 revolutions in one minute. How long will the wheel take to make one revolution? (2 marks)
6. Define density and state its SI unit. (2 marks)
7. Define force and name three types of forces. (4 marks)
8. A minibus of mass 2500kg is authorized to any 18 passengers. If the average mass per passenger is 50kg. Calculate:
9. The weight of the minibus. (1 mark)
10. The weight of all passengers. (2 marks)
11. Define pressure and state its SI unit. (2 marks)
12. A roof has a surface area of 2000cm2. If the atmospheric pressure exerted on the roof is 100,000pa, determine the force on it. (3 marks)
13. The barometric height in a town is 700mmHg. Given that the standard atmospheric pressure is 760mmHg and density of mercury is 13600kgm-3, determine the altitude of the town. (Density of air is 125kg/m3) (4 marks)
14. Find the resultant force of the following forces:-
15. 150N due to East and 200N due to West. (2 marks)
16. 450N due to North and 250N due to South. (2 marks)
17. Given the density of mercury is 13.6gcm-3 and has a column of mercury of 0.76m high. Calculate the pressure exerted by the liquid at the bottom of the container. (3 marks)
18. (a) The mass of lump of gold is constant everywhere but its weight is not. Explain. (3 marks)

(b) A mass of 7.5kg has a weight of 30N on a certain planet. Calculate the acceleration due to gravity on the planet. (2 marks)

1. Draw and describe a simple experiment to demonstrate that pressure in liquids increases with depth. (3 marks)
2. Explain the following statement:-
3. Drops of falling water are spherical. (1 mark)
4. Mercury meniscus is convex. (1 mark)
5. Towels are used to dry wet hands. (1 mark)
6. (a) States Pascal’s principle. (1 mark)
7. The figure below shows two forces applied on light pistons. The pistons are held horizontally by the liquid.

80cm2

0.000032m2

**F**

**600N**

Determine the value of force F. (3 marks)

1. State three applications of atmospheric pressure. (3 marks)
2. The atmospheric pressure on a particular day was measured as 750mmHg. Express this in Nm-2. (Assume density of mercury is 13600kg/m3 and g = 10Nkg-1. (3 marks)
3. A block of copper of density 8.9g/cm3, measures 5cm by 3cm by 2cm. Given that the force of gravity is 10N/kg. Determine:-
4. Mass of the block. (2 marks)
5. The maximum pressure. (3 marks)
6. The minimum pressure that it can exert on a horizontal surface. (2 marks)
7. Express the following:-
8. 2.136g/cm3 into kg/m3. (1 mark)
9. 0.00000025m2 into mm2. (1 mark)
10. 90000000mm3 into litres. (1 mark)
11. 100cm3 of fresh water of density 1000kgm-3 is mixed with 100cm3 of sea water of density 1030kgm-3. Calculate the density of the mixture. (4 marks)