FORM 2
PHYSICS
END TERM EXAMS-MARCH 2016
TIME: 2HRS

NAME…….……CLASS…….ADMIN NO…….

INSTRUCTIONS

1. This paper consists of two sections A and B
2. Attempt all the questions in each section in the spaces provided after every question
3. All working must be clearly shown
4. Electronic calculators may be used.

EXAMINERS USE ONLY

SECTION	QTN	MARKS	CANDIDATE SCORE
A	1-6	30	
B	7 8 9 10 11	10 10 12 9 9	
TOTAL		**80**	

SECTION A (25MKS)

1. In an experiment to estimate the height of the following measurement were obtained. Length of the shadow of the metre rule = 120cm (3mks)
   Length of the shadows of the tree = 20m
   Estimate the height of the tree

2. In an experiment to determine the thickness of the wire t, a number of turns were closely wound as shown below and length, l to be 16cm. Determine the thickness t. (3mks)

3. The water level in a burette is $27cm^3$. If 88 drops of water fall from the burette and the average volume of one drop is $0.25cm^3$. What is the final water level in the burette? (2mks)

4. a) State three precautions that must be taken when using the density bottle. (3mks)

b) The mass of an empty density bottle of volume $25cm^3$ is 10g. Iron fillings are poured into the bottle and the total mass is 35g. Water of density $1g/cm^3$ is added into the filling until the bottle is full. If the total mass of the bottle and its contents is 50g. Calculate the density of iron fillings. (3mks)

5. a) Name 3 types of forces that act without contact (3mks)

b) Explain why drops of filling water are approximately spherical (2mks)

c) State two consequences of surface tension (2mks)

6. (a) Define a resultant vector (1mk)

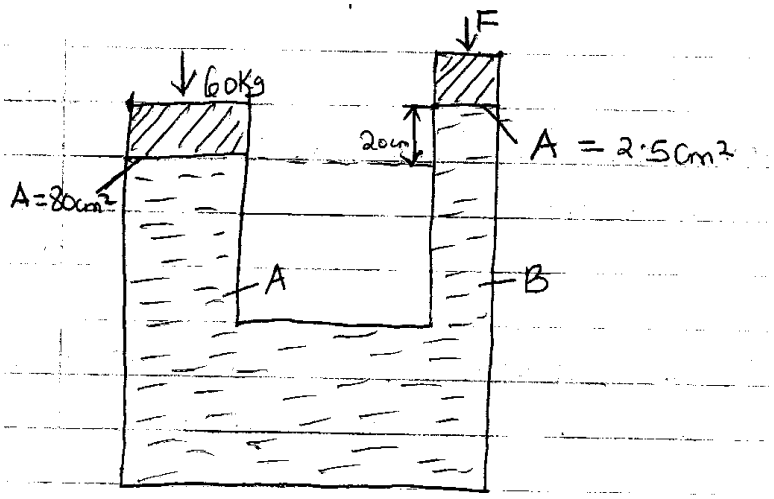
b) Find the resultant of a force of 5N and 3N acting at the same point on an object in opposite direction and in a straight line (2mks)

c) The moons gravitational pull is $^1/_6$ of the earth's gravitational pull. Calculate the weight of a body whose mass is 60kg on the moons surface given that the earth's gravitational pull is 10N/Kg (3mks)

d) A spring stretches by 5cm when supporting a load of 20N. By how much would it stretch when supporting a load sky? (3mks)

SECTION B (50MKS)

7. a) The figure below shows two masses placed on light pistons. The pistons are held stationary by the liquid, whose density is 1.03g/cm^3. Determine the value of force F.



b) A rectangular block of density 2.5g/cm3 has dimension 10cm x 40 cm x 30cm. The block rests on a horizontal flat surface. Calculate the maximum pressure it can exert. (3mks)

c) State two factors which affect pressure in liquids (1mk)

d) Explain why submarines, divers and common fish do not descend in water beyond certain depths (2mks)

8. a) State the kinetic theory of matter (1mk)

b) Explain why the smell of a perfume at one end of the room soon spreads throughout the room (2mks)

c) State two disadvantages of thermal expansion in solids (2mks)

d) State three properties of a liquid that is suitable for use in a thermometer (3mks)

e) When marking the fixed points on a thermometer it is observed that $0^{o}c$, the mercury thread is of length 1cm and 6cm at $100^{o}c$. What temperature would correspond to a length of 4cm. (2mks)

9. a) A pinhole camera of length 15cm forms an image 3cm of a man standing 9m in front of the camera. What is the height of man? (3mks)

b) How may images would be seen from two mirrors when reflecting surfaces make an angle of 60^0 with each other. (2mks)

c) When a charged rod is held close to a metal sphere placed on an insulated stand, the charge distribution on the sphere is as shown below

i) What is the sign of charge on the rod? (1mk)

ii) Why are metal chains attached to the trunks carrying petrol (2mks)

d) i) Define electric current and state its SI unit (1mk)

iii) A charge of 2000 coulombs passes through a point in a circuit in 30 minutes. Calculate the current in the circuit (3mks)

10. The graphs below are for two magnetic materials

a) Which material is easier to magnetise? (1mk)

b) State one Use of A. (1 mk)

c) Sketch the magnetic field pattern for the following arrangement (2mks)

d) The diagram below shows a micrometer screw gauge with a zero error. If the micrometer was used to measure the diameter of a wire whose diameter is 1.5mm, what would be the reading. (2mks)

e) If an oil drop of diameter 0.5mm spreads on the surface of water to form an oil patch of diameter 0.2m estimate the length of the oil molecule in two significant figures (3mks)

11. a) State the principle of moments (2mks)

b) Calculate the moment of the force about the fulcrum when a pet dog of mass 10kg is at a distance of 1.2 m form the fulcrum (3mks)

c) A metre rule is balanced by masses of 24g and 16g suspended from its ends. Find the position of the pivot (3mks)

d) Give two examples of activities in which a force produces a turning effect