**NAME…………………………………….**

**Admission number: ……………**

**Class: ………………………………….**

**physics**

form 1

TERM 1 2014

**MWAKICAN JOINT EXAM TEAM (MJET)**

**Physics**

PAPER 1

2 HOURS

**INSTRUCTIONS TO CANDIDATES**

1. Answer all questions.
2. All answers should be written in the space provided in this booklet.
3. Show all you working
4. Explain briefly the first aid measure that should be taken incase of(2mk)
5. Cut
6. Poisoning
7. Define physics.(2mk)
8. State any five branches of physics(5mk)
9. State any five career opportunity in physics (5mk)
10. State any five laboratory safety rules (5mk)
11. Name any 4 items contained in the first Aid kit found in the laboratory(4mk)
12. Briefly explain how physics is related to biology(2mk)
13. State any three effects of a force (3mk)
14. Describe the method you would use to measure the cicrumfrence of a cylinder using a thread and a meter rule(4mk)
15. A sphere of diameter 3.0 cm is mounted into a thin uniform wire of diameter 0.2mm calculate the length of the wire in meters(4mk)
16. State any three differences between mass and weight(3mk)

|  |  |
| --- | --- |
| mass | weight |
|  |  |
|  |  |
|  |  |

1. The mass of 25cm3 of ivory was found to be 0.045kg. Calaculate the density of ivory in SI units (3mk)
2. 300 cm3 of fresh water of density 1000kg/m3 is mixed with 100cm3 of sea water density 1030kg/m3.calculate the density of mixture (4mk)
3. Explain how you would measure the volume of irregularly shaped object using the displacement method. (3mk)
4. Distinguish between a fundamental and derived quantity giving an example of each (4mk)
5. Define force and state its SI unit (2mk)
6. State any 4 types of force (4mk)
7. Distinguish between a scalar and vector quantity giving an example of each (4mk)
8. State any 3 applications of capillary action (3mk)
9. State any two factors affecting the surface tension (2mk)
10. A man has a mass of 70kg. Calculate
11. His weight on earth where the gravitational strength is 10 N/kg (2mk)
12. His weight on moon where the gravitational strength is 1.7 N/kg (2mk)
13. Explain briefly why water wets the glass while mercury does not(2mk)
14. Complete the table below(7mk)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fundermental quality | SI UNIT | SYMBOL |
| 1 |  | meter | M |
| 2 | Mass |  | kg |
| 3 | Time |  |  |
| 4 |  |  | A |
| 5 |  | Kelvin | K |

1. Differentiate between cohesive and adhesive forces (2mk)
2. A body weighs 400N in water. If the up thrust force is 20N.calculate its weight in air (2mk)
3. Explain briefly why a razor blade floats in water and when soap solution is carefully added to the water it sinks (3mk)
4. Explain the following behavior of molecules.
5. When it is raining it is advisable not to touch a canvas tent from inside (2mk)
6. Water rises up in harrow tubes but Mercury which is also a liquid falls in a narrow tubes to level below the outside surface ?(2mk)
7. A eureka can of mass 100g and cross-sectional area 100cm2 is filled with water of density 1g/cm3.A piece of metal of mass 20g and density 8g/cm3 is lowered carefully into the can as shown

10cm

Calculate

1. The total mass of water and Eureka can before the metal was lowered (3mk)
2. The volume of water that overflowed (2mk)
3. The final mass Eureka can and its content (3mk)

MWAKICAN JOINT EXAMINATION

FORM 1 PHYSICS MARKING SCHEME.

1. **Explain briefly the first aid measure that should be taken in case of(2mk)**

Cut …… dress the cut to stop breeding

Poisoning…………. medical assistance should be sough

1. **Define physics.(2mk**

Physics is a natural since that deals with a study of matter in relation& energy or

Study of matter and natural forces.

3.Any five- mechanic, properties of matter, geometric optics, physical optic, sound ,heat, static electricity,magnetism, current elelcrticity, electronics, electromagnetic induction, atomic nuclear physics.

4. engineering and technology(laboratory technology, mapping and surveying, civil ,mechanical, instrumentation technology, meterology, electronics and telecommunication .architerure,aerinative,teaching, medical sports optician.

5.

5. Never enter the laboratory when the teacher is not in

(ii) Do only what the teacher has instructed you to do

(iii) Do not run, play or throw things

(iv) Never chew.eat or drink in the labarory

(v) Never heat glass bottle containers with stoppers on.

ix) Ensure sockets switches are off before plugging in any electric device.

vii) Never handle electrical apparatus with wet hands

xi) Avoid open circuits

xii) Wear protective goggle where there is a danger of hot or caustics materials being splashed into the

xiii) Tidy your work place after the experiment is over

Xiiii) Inform the teacher at once about any accidents.

6. Gloves, forceps, safety pins, mild antiseptic solution sterilized cotton wool and gauze. An assortment of bandages, pair of blunt ended scissors. (Any 4)

7. A biologist will assist a physist in the awareness of

-Balanced diet and nutritive diet.

-Some simple extenses to keep fit.

-Effects of excessive drinking and drug abuse.

A physist will help a biologist to develop a microscope and a hand lens used for magnification.

8. Change of state

 Change of shapes

 Turning effects

9. Tie a thread on the cylinder. Count the number of turns, measure the length of the thread using the metre rule. Divide the length by the number of turns.

10. volume of sphere =4/3$πr^{3}$ = 2/3 x 22/7 x 3/2 x 3/2 x 3/2cm3= 14.1428cm3 area of the wire $=πr^{2}=\frac{22}{7}x\frac{0.02}{2}x 0.02/2cm$3=0.00031428

14.1428 = 4500.6363cm=45m

0.00031428

 11. **MASS WEIGHT**

 Quantity of matter pull of gravity

 SI unit is kg SI unit is Newton

 Constant everywhere change from place to place

 Scalar quantity vector quantity

 Measured by a beam balance measured by a spring balance.

12. 0.045 = 1800kg/m3

 25 x 10-6

13. 300 + 1000 =400cm3

300 x 1g/cm3=300g

 100 x 1.03= 103g 403= 1.0075g/cm3 100.75kg/cm3

 403g 400

14. Partially fill the measuring cylinder with water. Record the initial column of water as v1 .immerse the object onto the water record the new reacting of the water as v2. The volume of the object =v2-v1.

15. Fundamental quantities. Cannot be expressed in terms of other quantities.

 Derived –expressed in terms of other quantities e.g. Area, volume, and density.

16. Force is pull or a push –SI unit = Newton.

17. –gravitational, friction, magnetic, electrostatic up thrust, action and reaction, tension cohesive and adhesive, surface tension.

18. Scalar –magnitude only-distance, mass, density, area, volume.

Vector –Both magnitude and directions force, weight, acceleration.

19. Spreading of ink over a blotting paper.

Kerosene rises up the wick of a lamp.

Rise of saps from the soil up in plants.

Towels used for drying.

20. Temperature

 Impurities

21. W = Mg

70 x 10 = 700n

b) W = Mg

70 x 1.7 = 119 N

22.

In water Adhesive force are greater that the cohesive in mercury. The cohesive forces are greater than adhesive

|  |  |  |
| --- | --- | --- |
| Fundamental quality  | Si units | Symbol |
| Length | Meter | M |
| Mass | Kilograms | Kg |
| Time | Second | S |
| Current | Ampere | A |
| Temperature | Kelvin | K |

Cohesive force – force of attraction between molecules of the same kind

Adhesive force- force of attraction between molecules of different kind

25) 400N + 20= 420N

26) Because of surface Tension – The soap solution breaks the surface tension

27) The surface tension is broken and therefore the water penetrates through.

(b) This is because of capillary action. The water rises up so as more molecules can be in contact with glass molecules while the mercury drops in the tube so as more mercury molecule can be in touch with each other.

V x p =m.

100 x 10 x 1 =100g – water

100g

100g

(b) Volume of metal

V=m/p=20/8=2.5cm3

c) 2.5x g/cm3=2.5g

 1100 + 20=1300-2.5 =1297.5g.