Name:……………………………………..………...……………Adm No………………………...

Signature:…………….……………

**PHYSICS**

**THEORY** Date:………………….......

**COMBINED PAPER**

**JULY/AUGUST 2016**

**TIME: 2 HOURS**

**PATHWAY EVALUATION EXAM – 2016**

***FORM 1***

**PHYSICS**

2 hours

**INSTRUCTIONS TO CANDIDATES**

* Write your name and admission number in the spaces provided.
* Mathematical tables and non-programmable calculators may be used.
* Attempt all the questions in the spaces provided.
* ALLOW working MUST be clearly shown.

**For Examiner’s Use**

|  |  |  |
| --- | --- | --- |
| **QUESTION** | **MAXIMUM SCORE** | **STUDENT’S SCORE** |
| **1** | **8** |  |
| **2** | **8** |  |
| **3** | **10** |  |
| **4** | **7** |  |
| **5** | **6** |  |
| **6** | **9** |  |
| **7** | **12** |  |
| **8** | **11** |  |
| **9** | **9** |  |
| **TOTAL** | **80** |  |

*This question paper has 8 printed pages. Check to ascertain that all pages are printed as indicated and that no question is missing.*

1. a) Identify **four** branches of physics. (4 marks)

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

(b) Name **four** career opportunities whose foundation is physics. (4 marks)

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

1. (a) Define the following terms as used in measurement. (4 marks)
2. Density

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

1. Mass

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

1. Accuracy

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

1. Error

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

(b) Explain two factors that affect surface tension. (4 marks)

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

1. 1000 cm 3 of fresh water with density of 10 000 kgm-3 is mixed with 1000 cm3 of sea water whose density is 30 000kgm-3.

Calculate:

1. The mass of fresh water (2 marks)
2. The mass of sea water. (2 marks)
3. Mass of the mixture. (2 marks)
4. Volume of the mixture in m3. (2 marks)
5. The density of the mixture. (2 marks)
6. (a) Name the type of force: (4 marks)
7. That allows for attraction between two bodies of given masses.

………………………………………………………………………………………………

1. Which is an upward and acting on objects immersed in a fluid.

………………………………………………………………………………………………

1. Which involves attraction or repulsion of static charges.

………………………………………………………………………………………………

1. Which constrains a body to move in a circular path.

**………………………………………………………………………………………………**

(b) An astronaut weighs 90N on earth. In the moon, he weighs 150N. taking g=10 N/kg, calculate the moon’s gravitational strength. (3 marks)

1. The length of a spring is is 20.0cm. its length becomes 24.0 cm when supporting a weight of 5.0N. Calculate the length of the spring when supporting a weight of:
2. 3.0 N (3 marks)
3. 120N (3 marks)
4. (a) Giving two examples in each case, distinguish between vector and scalar quantities.

(4 marks)

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

(b) A rectangular brick of weight 20N, measures 25 cm × 15 cm × 10 cm. calculate:

1. Area of the smallest face in m2. (2 marks)

..

1. Area of the largest face in m2. (2 marks)
2. Value of the maximum pressure exerted by the block resting on a horizontal table. (2 marks)
3. Value of the minimum pressure exerted by the block when resting on a horizontal table.

(2 marks)

(b) Other than the unit used in above, identify the other unit for measuring pressure. (1 mark)

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

1. (a) The experiment below was done by form 1 students.

**Ball and ring experiment**

Procedure

-Obtain a ball and ring apparatus bigger than the size of the ball.

-Pass the ball through the ring at room temperature.

-Heat the ball using a Bunsen burner for one minute.

-Try to pass the ball through the ring and observe what happens.

-Let it cool for some time and try passing the ball again.

(i) What was the purpose of experiment? (1 mark)

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

(ii) What happens when you try to pass the ball through the ring before heating it? (1 mark)

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

(iii) What happens to the ball when heated? (1 mark)

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

(iv) What happens when you try to pass the ball just after heating it? Explain. (2 marks)

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

(v) What is observed when you try to pass the cooled ball through the ring? (1 mark)

**……………………………………………………………………………………………………………………………………………………………………………………………………………..**

b) Explain **three** areas in which (a) (i) above can be applied. (6 marks)

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

1. (a) Define matter. (1 mark)

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

(b) Name two states of matter. (2 marks)

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

(c) Mention three examples of physical changes of matter. (3 marks)

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

(d) Name **three** sub-atomic particles that make up an atom. (3 marks)

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

(e) Give a reason for each of the following: (2 marks)

(i) Forces of attraction of individual atoms in solids are very strong.

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

(ii) Solids have fixed shapes.

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

1. A student blows into one end of a U-tube containing water until the levels differ by 40.0 cm. if the atmospheric pressure is 1.01 105N/m2 and the density of water is 1000 kg/m3, calculate his lung pressure. (3 marks)

(b) Explain three areas of application of pressure in gases and liquids. (6 marks)

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