**KAHUHO UHURU HIGH SCHOOL**

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

# FORM 4 BIOLOGY

**FORM 1 WORK TEST 2**

**TIME: 40 MIN (Speed test)**

### INSTRUCTIONS

* ***Answer all questions in the paper. (50 Marks)***

1. Distinguish between wall pressure and turgor pressure (2 marks)

1. State the significance of wilting in plants (1 mark)

1. An organ is to a tissue while an organelle is to a……………………………………………. (1mark)
2. An experiment was carried out to investigate haemolysis of human red blood cells. The red blood cells were placed in different concentrations of sodium chloride solution. The percentage of haemolysed cells was determine. The results were as shown in the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Salt concentration g/100cm3 (%)** | **0.33** | **0.36** | **0.38** | **0.39** | **0.42** | **0.44** | **0.48** |
| **Red blood cells Haemolysed (%)** | **100** | **91** | **82** | **69** | **30** | **15** | **0** |

(a) (i) On the graph paper provided, plot a graph of haemolysed red blood cells against salt concentration. (6 marks)

(ii) At what concentration of salt solution was the proportion of haemolysed cells equal to non-haemolysed cells. (1 mark)

(iii) State the percentage of cells haemolysed at salt concentration of 0.45 percent. ( 1 mark)

(b) Account for the results obtained at:-

(i) 0.33 percent salt concentration. (3 marks)

(ii) 0.48 percent salt concentration. (3 marks)

(c) What would happen to the red blood cells if they were placed in 0.50 percent salt solution.(2 marks)

(d) Explain what would happen to onion epidermal cells if they were placed in distilled water.(3 marks)

1. Cells of a certain herbaceous plant were found to have an average diameter of 2.5mm. The cells were placed in varying concentrations of sugar solution. The average diameter of these cells in each solution was determined and the results obtained as shown in the table below.

|  |  |
| --- | --- |
| **Concentration of sugar solution** | **Diameter of cells (mm)** |
| 1% | 5.0mm |
| 5% | 4.0mm |
| 10% | 3.0mm |
| 15% | 2.0mm |

1. From these results determine the concentration of the cell sap of the herbaceous plant. (1 mark)

1. What term is given to the sugar solution whose concentration is equal to that of the cell sap? (1 mark)

1. Give an explanation for the average diameter of the plant cells when placed in 10% sugar solution. (3 marks)

1. State two factors which affect the rate of active transport. (2 marks)

1. (a) What is diffusion. (2 marks)

(b) State three differences between osmosis and diffusion. (3 marks)

|  |  |
| --- | --- |
| **Osmosis** | **Diffusion** |
|  |  |
|  |  |
|  |  |

(c) Outline two roles of active transport in the human body. (2 marks)

1. Four equal strips A, B, C and D were cut from a potato whose cell was 28% sugar. The strips were placed in sugar solutions of different concentrations as follows A – 10% , B 18% , C –25% and D – 40%.
   * 1. What changes would you expect in strips A and D. (2 marks)

* + 1. Account for the changes in A and D. (2 marks)

1. The uptake of water by the plant roots is done by a physiological process.
   * 1. Name the process (1 mark)

* + 1. Give two factors that make the process you have named in (i) possible. (2 marks)

1. State the differentiation that each of the following cells have undergone to help them perform their functions.
   1. Mature ovum (1 mark)

* 1. Nerve cell. (1 mark)

* 1. Muscel cell (1 mark)

1. Some drops of fresh pineapple juice are added drop by drop to DCPIP solution. The blue colour of the DCPIP quickly fades .
   1. What food substance is present in the juice? (1 mark)

* 1. What is the importance of this food substance to the human body. (1 mark)

* 1. When these food substances if deficient in the body what health disorders could result? (1 mark)