**NAME: …….** **SIGNATURE: ……..…….**

S.6 BIOLOGY DECEMBER ASSESSMENT TEST 2022

TIME: 60 MINUTES INSTRUCTIONS: Attempt all questions.

**SECTION A (40 MARKS)**

1. The figure 1 below shows the changes in the membrane potential showing the electrical events associated with the nerve impulse in an axon. While figure 2 shows changes in the permeability of the membrane of axon to sodium and potassium ions during transmission of an impulse which occurs very fast and rapidly.

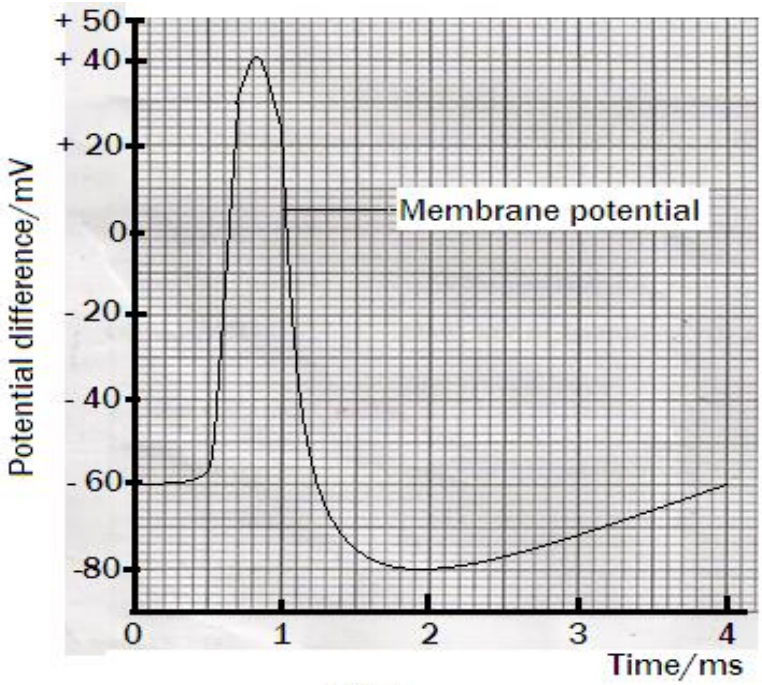


Fig. 1

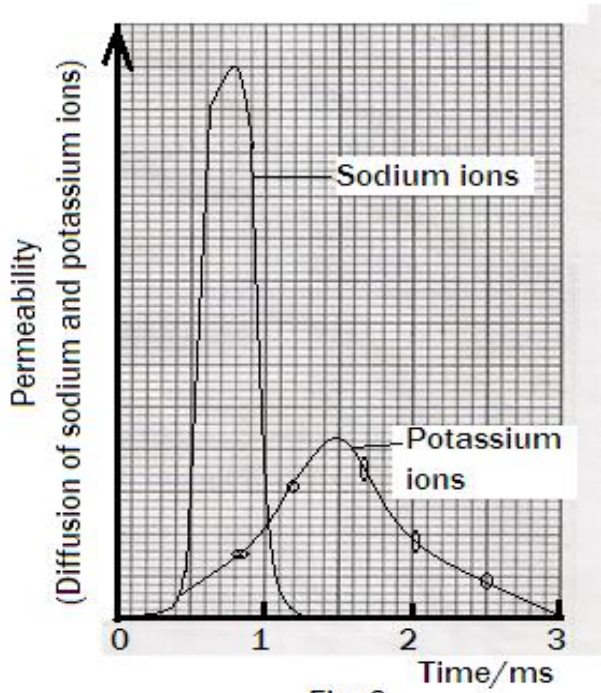


Fig. 2

**(a)** Compare the trend of diffusion of sodium and potassium ions across the membrane of an axon over the 3 milliseconds (ms) period. **(07 marks)**

**(b)** Using both figures 1 and 2,. Explain the trend of each of the following during the propagation of the impulse in the axon,

(i) Membrane potential. **(12 marks)**

(ii) Sodium ions. **(06 marks)**

(iii) Potassium ions. **(06 marks)**

**(c)** In each case, state two factors which can cause rapid and slow propagation of impulses. (02 marks)

**(d)** Give the significance of fast conduction of impulses to organisms **(03 marks)**

**(e)** Why is it difficult to stimulate an axon shortly after it has transmitted an impulse? **(04 marks)**

**END!!!**

***"Success is through repeated practice"***