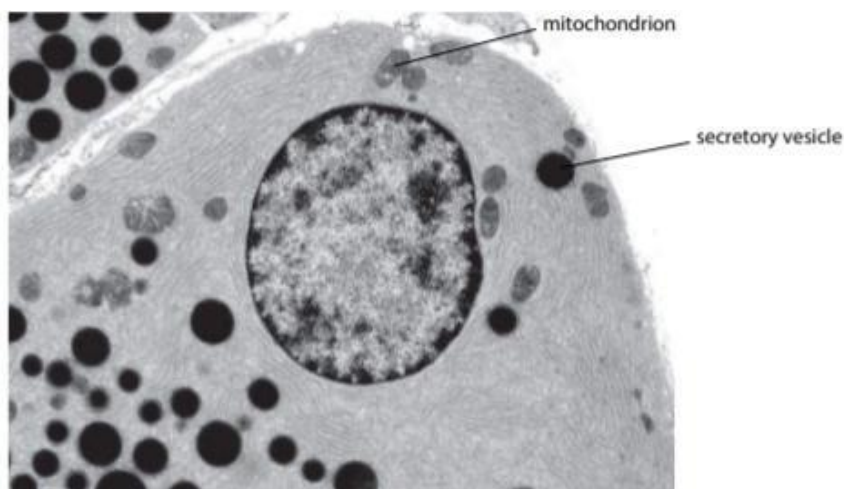# S5 BIOLOGY TEST 1
1 hour 30 minutes
Attempt all

Item 1: The Alien Cell Investigation

Scientists at the International Space Station have discovered a mysterious alien microbe in a Martian soil sample! The microbe seems alive, Your team of young scientists has been given images of this alien cell and must analyze its ultrastructure to determine how it functions.

a) Suggest how you would group this microbe according to the two major types of cells. Explain your answer.   (04 scores)

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b) Given that the above image was taken at a magnification of ×8000, measure and determine the actual size of the part of the microbe shown in greatest dimension, in micrometers. (um)   (03 scores)

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c) According to it's cellular structure, predict if the alien microbe would survive if brought on earth. Explain your reasoning.   (04 scores)

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Item 2: The chemicals in a typical cell.

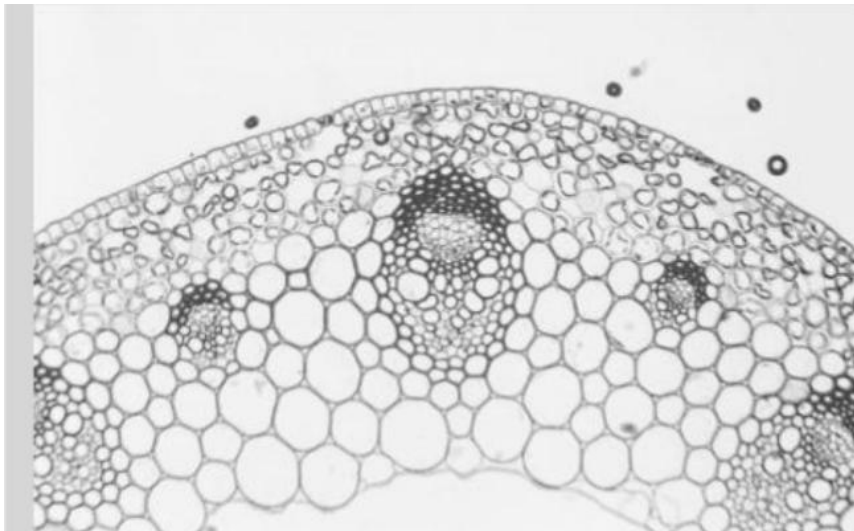Triglycerides and phospholipids are similar in structure yet not exactly the same.

a) State how the structure of triglycerides and phospholipids Differ, and suggest how this affects the difference in their properties.   (03 scores)

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b) Explain how phospholipids are important in maintaining cellular structure and function.   (04 scores)

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    c) The cytoplasm of a cell mainly contains water. Suggest how water is important in the cytoplasm of a cell.   (04 scores)

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Item 3: the plant mystery

Students of Victoria studied a plant section under a microscope and were able to take the following micrograph.

a) From the micrograph above identify any 4 types of tissues present in this plant. (02 scores)

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b) For each of any two of the tissues mentioned above, state two adaptations seen on this micrograph that enable the tissues to perform their functions in this organ. (04 scores)

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c) Which type of microscope was most likely used in this study? Explain your answer. (02 scores)

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d) Emily, a 25 year old woman has been experiencing cough and pain in the chest. When examined by a doctor, it was found that the tissue lining of her trachea and bronchi is damaged. Identify the tissue found in this area and explain how the damage would affect her health. (03 scores)

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END