

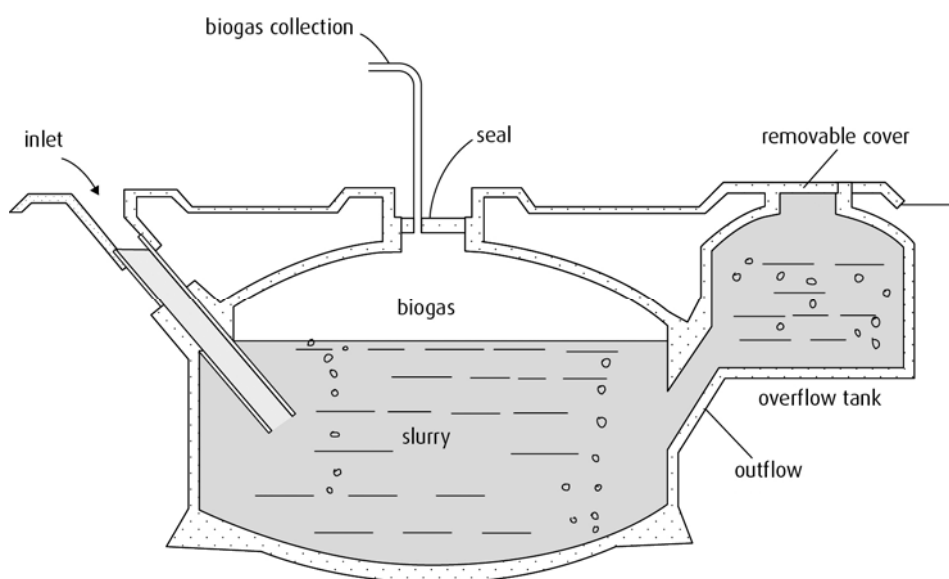
Support worksheet – Option F

- 1 a Copy and complete the following table, which distinguishes the three domains of living organisms by their features. (7)

Feature	Bacteria	Archaea	Eukaryota
DNA associated with histones			yes
structure of cell wall	peptidoglycan		
introns present			

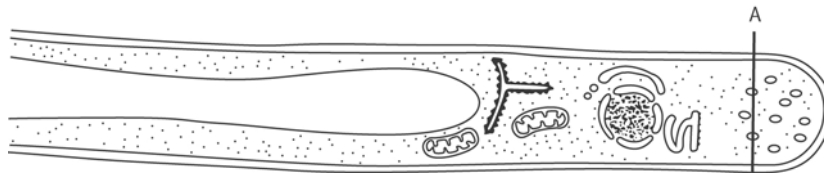
- b Identify the following members of the Archaea from the descriptions of their habitats.
- These organisms use carbon dioxide to make methane. They are killed by oxygen. They may be found in the intestines of cattle, dogs or humans, or in swamps. (1)
 - These organisms live in salty places such as the Dead Sea. They can tolerate ten times the salt content of the open sea. (1)
 - These organisms are found in hot springs where the pH is very acidic and the temperature can reach 90 °C. They may also be found in hydrothermal vents under the sea. (1)

- 2 The diagram below shows a small-scale biogas generation system that produces methane.



- Suggest **two** substances that might be fed into the 'inlet'. (2)
- The first stage involves conversion of organic matter into organic acids and alcohol. Name the organisms that carry out this process. (1)

- c** A second group of bacteria convert organic acids and alcohol to acetate, carbon dioxide and hydrogen and a third group create methane from these substances. Name the third group of organisms and the domain to which they belong. (2)
- d** Suggest how slurry might be used. (1)
- 3** The diagram below shows a section of the fungus *Aspergillus oryzae*:



- a** What features of the diagram indicate that this organism is a eukaryote? (3)
- b** *A. oryzae* is used in the production of soy sauce. Name the primary substrate on which it feeds to begin the process. (1)
- c** Organize the following statements in the correct order to summarize the production process: (5)
- A** filter and pasteurize
 - B** incubate for three days at 30 °C
 - C** mash soy beans with toasted wheat
 - D** soak soy beans and boil
 - E** add salt and water and ferment for up to six months
- d** Copy and complete the following paragraph, filling in the gaps with appropriate words. (7)
- S. cerevisiae* is usually called _____. It is used in baking and brewing. It uses sugars for energy and produces _____ and _____. In bread making, the main function of the organism is to _____. Dough is warmed because this makes _____. During baking, the *S. cerevisiae* is _____ and _____ evaporates.
- e** Give biological explanations for the following statements.
- i** On sea voyages long ago, meat was kept in barrels of salt. (1)
 - ii** Raspberries will rot after a few days but raspberry jam can be kept for over a year. (1)