

14. Describe the similarities **and** differences between batch and continuous flow processing. (3)

A batch process refers to a process that includes a series of steps executed in a specific order, while a continuous process refers to the flow of a product unit without interrupting time, content, or expansion between each step of the process. When the expected pollution is high. If you do not consider blocking, the process is in progress. The product life of batch process is shorter about 1 – 2 years while continuous flow process has high product life

15. Human anti-thrombin DNA can be used to produce transgenic bacterial cells. Describe one advantage of producing human anti-thrombin in **goat** rather than bacterial cells. (2)

Goats are best choice due to short generation time and easily available . goats are in expensive flexible and can give large scale production .

16. Name **and** describe a method used to purify proteins. (4)

There are many methods for protein purification one of the method is **Extraction**.

In this method Depending on the source, the protein must be dissolved by destroying the tissue or cell in which it is located. There are multiple ways to do this. Repeated freezing and thawing, ultrasonic treatment, high pressure homogenization or permeability to organic solvents takes place. The choice of method depends on the fragility of the protein and the resistance of the cell. After this extraction process, the soluble protein is in the solvent and can be separated from the cell membrane, DNA, etc. by centrifugation. The extraction process also recovers the protease, which starts to digest the protein in the solution. If the protein is sensitive to proteolysis, it is usually necessary to act quickly and keep the extract cold. Slow proteolysis.

17. Outline the process used to make yoghurt. Include the organism used, the process used to generate the end product and the use of the end product. (5)

Process of yoghurt

Two kinds of bacteria (*Lactobacillus bulgaricus* and *Streptococcus thermophilus*) are used to ferment milk sugar (lactose). ...10 minutes before adding culture. Heating also denatures the whey protein, which makes the yogurt form a more stable gel. Finally, pasteurization can effectively remove disease-causing bacteria. Adjust the milk composition and ingredients in