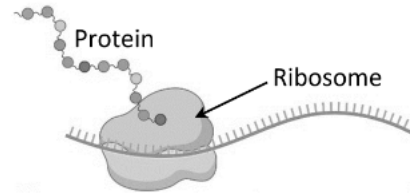
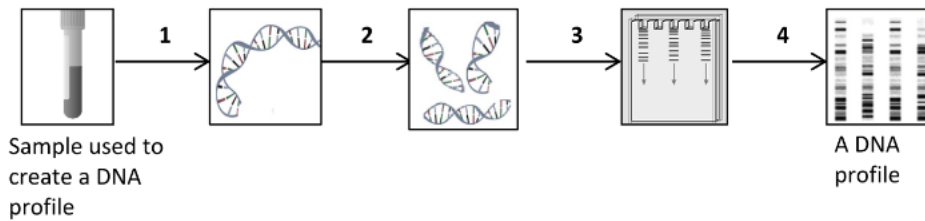


## GENETIC ENGINEERING

- (b) Genetic engineering is an important biological technique.
- (i) What is meant by the term *genetic engineering*?
  - (ii) Describe the process of genetic engineering up to the point of expression of the gene of interest.
  - (iii) The final part of genetic engineering, gene expression, involves the formation of a protein. Protein synthesis occurs on ribosomes, as shown in the diagram. Ribosomes are composed of rRNA subunits. Name the other **two** types of RNA involved in protein synthesis.
  - (iv) State **one** application of genetic engineering for **each** of the following:
    1. Animals
    2. Microorganisms
    3. Plants.



- (b) The series of images below represents the four main stages of the DNA profiling technique invented by Sir Alec Jeffreys in 1984.



- (i) Distinguish between *DNA profiling* and *genetic screening*.
- (ii) Explain **each** of the Stages, **1 to 4**, of DNA profiling shown above.
- (iii) Give any **two** applications of DNA profiling.
- (iv) Identical twins have the same DNA profile. Explain why this is so.

(27)