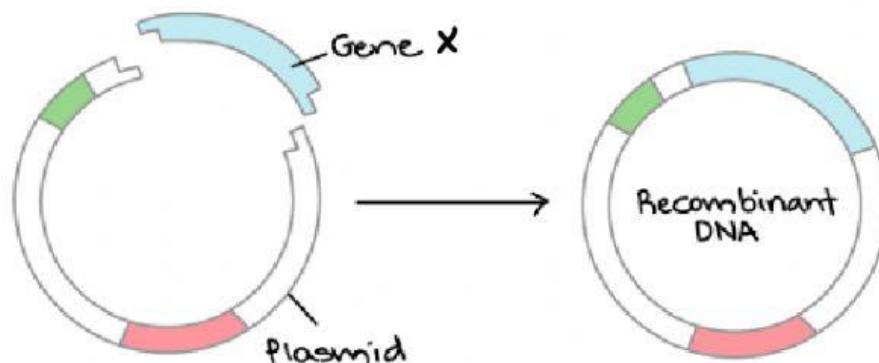


# MODUL 1 BIOLOGY KUMPULAN PdPR

Minggu 1/1

- 1 Diagram 1 shows the technology called genetic engineering which is practised to produce insulin.  
*Rajah 1 menunjukkan teknologi yang dipanggil kejuruteraan genetik yang digunakan untuk menghasilkan insulin.*



- (a) Explain the meaning of genetic engineering.  
*Terangkan maksud kejuruteraan genetik.*
- [1 mark/markah]
- (b) Name the organ from which gene X is taken.  
*Namakan organ di mana gen X diambil.*
- [1 mark/markah]
- (c) State one disease that is treated using insulin.  
*Nyatakan satu penyakit yang dirawat menggunakan insulin.*
- [1 mark/markah]
- (d) Before genetic engineering was discovered, state two sources where insulin is obtained.  
*Sebelum kejuruteraan genetik ditemui, nyatakan dua sumber insulin ini diperolehi.*

[2 marks/markah]

(e)

Gene X from humans is inserted into a bacterial plasmid. This bacterium will then be cultured extensively to produce insulin.

*Gen X daripada manusia disisipkan ke dalam plasmid bakteria. Bakteria ini kemudiannya akan dikultur dengan banyak untuk menghasilkan insulin.*

Based on the above statement, why is bacteria suitable to be used in genetic engineering techniques?

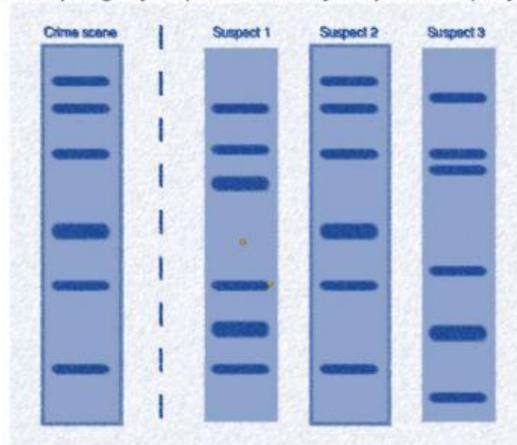
Berdasarkan pernyataan di atas, mengapa bakteria sesuai digunakan dalam teknik kejuruteraan genetik?

[2 marks/markah]

### 13.2) Biotechnology/Bioteknologi

2(a) DNA profiling has become very important in crime scene investigation. Diagram 2 shows the DNA profile found at the crime scene and the DNA profile of three suspects.

*Pemprofilan DNA sangat penting dalam siasatan di lokasi jenayah. Rajah 2 menunjukkan profil DNA yang dijumpai di lokasi jenayah dan profil DNA bagi tiga orang suspek*



(i) Explain what is meant by DNA profiling.

*Terangkan apa yang dimaksudkan sebagai pemprofilan DNA.*

[2 marks/markah]

(ii) Based on Diagram 2, who is the real criminal? Discuss your answers.

*Berdasarkan Rajah 2, siapakah penjenayah sebenar? Huraikan jawapan anda.*

[4 marks/markah]

- (b) State the applications of DNA profiling.  
*Nyatakan kegunaan pemprofilan DNA.*

[4 marks/markah]

- (c) Explain briefly the steps involved in DNA profiling.  
*Terangkan secara ringkas langkah-langkah yang terlibat dalam pemprofilan DNA.*

[10 marks /markah]