**IB Biology:** Biotechnology Review (3.5) **NAME:**

1. What does *PCR* stand for?
2. How is PCR useful in investigations?
3. Outline briefly how gel electrophoresis works.
4. What are two main uses of DNA profiling by electrophoresis?
5. Use the gel electrophoresis results below to answer these questions.



1. Which criminal, Rob McCarr or Nick Allott, left their cigarette-end at the crime scene? How do you know?
2. Color in bands to show where the ‘**standard**’ fragments would be observed.
3. What evidence is there to suggest that Nick and Rob are related?
4. This father thinks that the second child is not his – he looks too different from him! He has seen the mother and the mailman chatting and is suspicious. He stole some hair from all family members and swabbed a cup the mailman used and ran a gel electrophoresis to confirm his suspicions.
5. What is meant by the term ‘the genetic code is universal’?
6. What is a *transgenic organism*?
7. Describe how a gene can be transferred into a bacteria using the terms *restriction enzymes, plasmids, and DNA ligase*:
8. How is gene transfer used in industrial production of insulin?
9. Give three examples of genetically modified plant crops and the effects of their new genes.

|  |  |
| --- | --- |
| Named Example | Description |
| ‘Golden Rice’ |  |
|  |  |
|  |  |

1. Outline the potential benefits and risks of producing and consuming genetically-modified plants and animals:

|  |  |  |
| --- | --- | --- |
|  | **Benefits** | **Risks** |
| Health |  |  |
| Environment |  |  |
| Agriculture |  |  |

1. Define *clone* and give two naturally-occurring examples of clones:



1. Outline the method (SCNT- Somatic Cell Nuclear Transfer) used to clone Dolly the sheep by annotating the diagram to the right 🡪
2. Distinguish between *reproductive cloning* and *therapeutic cloning* using SCNT.