ATBIO TASK 1 VALIDATION MARK SCHEME /35

1. Restriction enzymes cut DNA (1) at specific recognition sites needed for investigation (1). Labelled diagram showing sticky and blunt end (2)
2. DNA is negatively charged (1) and will pass through the pores of the gel towards the positive when an electric current is passed through it.(1)
3. They are repeated base pair patterns that occur along DNA (1) each individual has a unique number of these repeats (1) so this can be used to give a fingerprint for that individual (1).
4. A molecular marker is a set of nucleotide bases of known kb sizes (1) it can be placed in a gel plate (1) so that samples being analysed can be compared to it in order to highlight regions of interest. (1) or reasonable response.
5. Polymerase chain reaction is a process by which DNA is amplified to make billions of copies from a very small sample over a short time (1). The section of DNA to be amplified is first isolated and heated to 98 degrees (1) in order to denature it (1) resulting in 2 single strands from the original one. (1) It is then cooled to 60 degrees (1) and primers (1) are annealed to the strands (1). The sample is then heated to 72 degrees (1) and complementary free nucleotides are added using DNA/Taq polymerase to extend/elongate the DNA (1) resulting in two copies of the original=1 cycle (1)
6. Forensic analysis (1), paleontology/remains analysis (1), smuggling of protected species, paternity tests in captive breeding etc (1)
7. Fluorescent markers iridium bromide dyes (2)
8. This gives clear determination of individuals with the desired genetic trait and it is much quicker as it doesn’t need time for the individuals to grow. (2)
9. Smuggling scenarios to determine if contraband is from a protected species, paternity in captive breeding etc (2)

Mark out of 4 for practical