

Solutions

2.1

- Thick peptidoglycan (many layers, teichoic acids) traps the crystal violet–iodine complex at the decolouriser step.

2.2

- Streptococci – catalase negative rules out staphylococci ✓.

2.3

- Whether the organism is ALIVE and drug-sensitive – viability and susceptibilities come only from culture ✓.

3.1

- PCR amplifies nucleic acid present in the sample, dead or alive, so a template answers in ~1–2 h.
- Culture must grow viable cells to visible colonies – 24–48 h for most bacteria.
- PCR cannot report viability or susceptibility categories ✓.
- Culture yields the isolate for susceptibility testing and the reference-standard identification.

3.2

- Coagulase-negative staphylococci are skin flora – the usual contaminant of venepuncture ✓.
- True bacteraemia typically seeds both bottles; one positive of two points to contamination.
- Repeat the culture with careful skin preparation before naming any organism from a single bottle.