

Question 39 (Answer: C)

- Monoclonal antibodies come from a hybridoma: one cell fused from two.
- A B-lymphocyte supplies the ability to make one specific antibody.
- A tumour cell supplies the ability to divide indefinitely.

Question 40 (Answer: C)

- An antigen-binding site is formed where a heavy chain and a light chain meet, at the variable ends.
- There are two such sites, one on each arm of the Y.
- The two arms are identical to each other, so the corresponding parts have the same amino acid sequence.

Question 39 (Answer: A)

- A vaccine causes an *active* response, so the body makes its own antibodies and memory cells.
- That means a rise in lymphocyte numbers, and a bigger, faster response on the second exposure.
- Look for the treatment that produced memory cells rather than just supplying antibodies.

Question 40 (Answer: B)

- The vaccine contains the toxin in a harmless form, which acts as an antigen.
- B-lymphocytes with the matching receptor are selected and divide into plasma cells and memory cells.
- On real infection the memory cells respond quickly, making antibodies that neutralise the toxin.

Question 38 (Answer: A)

- A vaccine causes a *primary* response, which is slow because so few lymphocytes match the antigen.
- Those few must be selected and then divide many times before enough plasma cells exist.
- Long-term immunity depends on memory cells, which are only produced during that primary response.

Question 39 (Answer: B)

- The antibodies were made by the horse, not by the patient.
- Receiving ready-made antibodies is *passive* immunity.
- It is artificial because they were injected rather than acquired naturally.

Question 40 (Answer: D)

- A monoclonal antibody comes from a single clone, so every molecule is identical.
- Its binding site is complementary to one specific antigen and no other.
- That specificity is what lets it target only the diseased cells.