SECTION 3 – EXTENDED ANSWER (20 MARKS)

1. (a) What is meant by specific in the phrase 'specific immune response'? Describe the specific immune response to an invading pathogen.

① Specific = Tailored to deal with a particular (non-self) antigen.

① Two Types = Humoral / Antibody Mediated + Cell-Mediated.

Humoral	Cell Mediated.
① Antigen activates B-lymphocytes	① Antigen activates T-lymphocytes
② B-cells enlarge, divide + clone	② T-cells enlarge, divide, clone
③ Most clones become plasma cells which secrete specific antibody	③ Killer T cells migrate to site of infection and destroy antigen by secreting cytotoxic chemicals
④ Antibodies circulate blood attach to the antigen (target) forming antigen-antibody complex	④ Helper T cells secrete substances which activate other lymphocytes enhance process.

[10 marks]

(b) Vaccines which stimulate the body's natural defence systems have been developed for many diseases. Explain how these work and prevent us from succumbing to disease.

medical intervention → Body manufactures antibodies

① Vaccines develop artificial active immunity

Vaccines types include: (Any 3)
- ① Dead pathogens / micro-organisms.
- ① Weakened / attenuated pathogens / micro-organisms.
- ① toxoids.
- ① Sub-Unit / Parts of micro-organism.

These all stimulate an immune response because:
- ① Body manufactures own antibodies without contracting the disease
- ① Body produces memory cells which activate secondary response after 2nd exposure
- ① Protection is long lasting.

[7 marks]