B6.3 – Part 1 Summary questions

1. disease, communicable, pathogens, non-communicable, cancer
2. influenza – virus
powdery mildew – fungi
crown gall disease – bacteria
malaria – protozoa

3. a. Two appropriate suggestions, e.g. through bodily fluids during sexual intercourse / through animal bites from an infected animal / through the respiratory system when someone sneezes and you breathe in the pathogen.
b. Two appropriate suggestions, e.g. by fungal spores being blown by the wind / through vectors such as insects / through direct contact with an infected plant or plant material.
c. Animal – any two from e.g. quarantine, preventing movement / sale of livestock, use of disinfectants e.g. at field entry / exit points, wearing of a mask, minimising exposure time to potentially infected people, vaccination.
   Plant – any two from e.g. burning infected plants, crop rotation, physical removal of infected plant, use of fungicide / bactericide.

4. a. Any three from e.g. saliva in mouth, acid in stomach, skin, formation of scabs, tears (contain lysozymes).
b. A scab is formed. This occurs when platelets form a network of protein threads. This captures red blood cells and more platelets to form a clot, sealing the wound.
c. Any two from: white blood cells may engulf the pathogen / may produce antibodies / may produce antitoxins.

5. The pathogens would have a cell wall, free-floating genetic material / no nucleus, may have flagella / pili / slime capsule present, smaller than human body cells.

6. a. The region around the antibiotic where bacteria are killed / cannot survive.
b. 78.5<#>mm², 40.7<#>mm², 66.5<#>mm²
c. The scientist would select the antibiotic which produces the largest zone of inhibition, as this will be the most effective at killing the specific bacteria. In this case, antibiotic A is most effective.

7. a. A vaccine is a dead or weakened form of a pathogen. It is unable to cause disease. This is injected into a person, which stimulates the white blood cells to produce antibodies. If the real pathogen later enters the body, the body is able to respond more quickly, destroying the pathogen before it has chance to cause disease.
b. 1950
c. 69%
d. Reasonable suggestion, e.g. not all children were vaccinated / the vaccine may not have been successful for all children.

8. a. Potential compound identified; tested on cells / bacteria / tissue cultures; tested on animals; clinical trials / tested on humans; approval for use.
b. i. Monoclonal antibodies bind to a specific antigen on a target cell.
   ii. The monoclonal antibody only binds to antigens on the targeted cells, rather than acting non-specifically. Therefore its effect (e.g. delivery of radioisotope to a cancer cell) is only applied to the targeted cells / immediate vicinity.
c. Reasonable suggestion, e.g. not all patients will respond in the same way to a treatment / cost of drugs may be prohibitive / other medicines may interact with the treatment, reducing effectiveness / causing unwanted side effects.