A. Infection and Response Part 1

1. What is the definition of a pathogen?

2. List four types of micro-organism which can act as pathogens.

3. Copy and complete the table to describe one similarity and one difference between how bacteria and viruses act as pathogens.

Pathogen	Similarity	Difference
Bacteria		
Virus		

4. What do pathogens need from the host organism?

5. Complete the sentences:

HIV can be successfully controlled with _____drugs. If the immune system is badly damaged then _____ may develop.

6. Copy and complete the table for each disease.

Disease	Symptom	Method of transmission	Control spread of disease by:	Caused by:
Measles	Fever Red skin rash		Child Vaccination	
	Fever, cramp, vomiting, diarrhoea	Food prepared in unhygienic conditions or not cooked properly		Bacteria
Rose Black Spot	Purple black spots on leaves		Remove infected leaves and spray with pesticide	
Gonorrhoea		Direct sexual contact or body fluid exchange	Use of a condom and treat infected person with antibiotics	Bacteria
	Recurrent fever	By a vector from an infected person	Preventing breeding of mosquitoes or use of a net to prevent being bitten	
Tobacco Mosaic Virus	Mosaic pattern on leaves			Virus

7. Look at this photograph.

Suggest how pathogens could be transferred in this situation.

What could people do to reduce the spread of pathogens?

B. Infection and Response Part 1b

1. Name and describe 3 ways the human body defends against the entry of pathogens.
2. Draw a series of pictures to show how white blood cells carry out phagocytosis.
3. What is an antigen?
4. Why will the antibody produced for measles not be effective in other diseases?
5. Why are dead or inactive pathogens used in a vaccine?
6. What happens if the live pathogen invades the body after being vaccinated?
7. What is an antibiotic and what is it used for?
8. Why is there a growing concern about bacterial resistance to antibiotics?
9. Which one of these statements is true?

•*Painkillers are used to treat the symptoms of a disease and kill the pathogens which cause it.*
•*Painkillers are used to kill the pathogens causing a disease.*
•*Painkillers are used to treat the symptoms of a disease but do not kill the pathogens.*

C. Infection and Response Part 2

1. Choose the answer from the box to complete the sentences.

Willow tree bark	Foxgloves	Laboratory	Mould

Digitalis is a drug used for heart conditions.
It originates from _____.

Aspirin is a drug used as a painkiller.
It originates from _____.

Penicillin is an antibiotic drug.
It originates from _____.

2. Any potential new drug has to go through a series of tests.
What is meant by the following terms?
a) Efficacy b) Toxicity c) Optimum dose

3. Number these statements to show how drugs are tested.

Drugs are trialled on live animals
Drugs are trialled on people with the disease the drug is for
Drugs are trialled in laboratories on cells and tissue cultures
Drugs are trialled on healthy volunteers

4. Drugs companies often use a placebo in their trials.
a. What is a placebo? b. Why is it used?

Questions for Biology HT only

HT 5. Place the statements in the correct order to show how monoclonal antibodies are produced.

- ❑ **Mouse lymphocytes produce antibodies.**
- ❑ **The antibodies are collected and purified.**
- ❑ **Mouse lymphocytes are collected.**
- ❑ **Mouse is injected with a pathogen.**
- ❑ **Hybridoma cells are separated and cultured to form a clone.**
- ❑ **Mouse lymphocyte and mouse tumour cell are fused.**
- ❑ **The clone produces large quantities of antibody.**

HT 6. What are the applications of monoclonal antibodies?

HT 7. Why do some people feel the use of monoclonal antibodies is unethical?

D. Infection and Response Part 3

1. Name 3 ways you can detect that a plant is diseased.
2. Copy and complete the table below:

Type of plant defence used (Mechanical, physical or chemical)	What is the plant being defended from?	Describe the defence being used
	Herbivores eating it	Thorns or hairs
Chemical		The chemical released is antibacterial
	Herbivores and pathogen entry	Dead bark coating which falls off
Physical	Insects such as aphids	

3. Describe why nitrate ions are very important for plants.
4. What is chlorosis and how can it be prevented?
5. Why would a test kit containing monoclonal antibodies be useful to detect plant disease?