**Unit 1: Biology 1**

**B1.1 Keeping healthy**

**B1.1.1 Diet and exercise**

1. What is metabolic rate?
2. Why does exercise increase the body’s need for energy?
3. What factors influence metabolic rate?
4. Why do you need to eat carbohydrates, fats and proteins?
5. What does ‘obese’ mean?
6. Explain why high cholesterol in your blood increases the risk of heart disease
7. How is type 2 diabetes often caused?

**B1.1.2 How our bodies defend themselves against infection**

1. Why is it hard to say whether viruses are truly living?
2. Who was semmelweis and what was his main contribution to health care?
3. Why is MRSA a problem?
4. What are the main causes of antibiotic resistance?
5. Why is it difficult to make drugs which cure viral infections?
6. How does natural selection lead to antibiotic resistance?
7. Describe two ways white blood cells can kill pathogens
8. Explain how you become immune to a disease such as measles
9. What do vaccines usually contain?

**B1.2 Nerves and hormones**

**B1.2.1 The nervous system**

1. Why are reflexes automatic and rapid?
2. Describe the way in which impulses travel from synapse to synapse
3. List four stimuli that your skin can detect

**B1.2.2 Control in the human body**

1. What are hormones?
2. Where are hormones secreted, where do they travel to and how are they transported around the body?
3. How does your body generate heat and lose heat?
4. How does your body lose and gain water?
5. What is the role of FSH, LH and Estrogen?
6. Explain which part of the menstrual cycle a woman is most likely to conceive on.

**B1.2.3 Control in plants**

1. Why is it an advantage for plant shoots to show positive phototropism and roots to show positive geotropism
2. Describe the three main commercial uses of auxins
3. How does auxin make a shoot bend towards the light?

**B1.3 The use and abuse of drugs**

**B1.3.1 Drugs**

1. Explain the terms drug, addiction and withdrawal
2. Explain why new drugs need to be tested before they are licenced for use as medicines
3. Why may people move from recreational to hard drugs?
4. What is thalidomide, why was it originally used and what problems did it cause?
5. Explain some of the misuses of legal and illegal recreational drugs
6. What health problems can cannabis cause?
7. Describe two different types of performance enhancing drugs

**B1.4 Interdependence and adaption**

**B1.4.1 Adaptions**

1. Explain how some animals are adapted to cold environments
2. Explain how some animals are adapted to hot and dry environments
3. Explain how some plants are adapted to dry environments
4. What is an extremophile and where may they be found?
5. List 4 things that animals and plants may compete for
6. Explain why plants need light to survive, but animals do not.

**B1.4.2 Environmental change**

1. Describe what might cause the distribution of an animal species to change
2. Why is it important that developers create nature reserves for species when developing a new area?
3. Explain the importance of indicator species and give some examples
4. Name 3 non-living and living indicators of pollution

**B1.5 Energy and biomass in food chains**

**B1.5.1 Energy in biomass**

1. What happens to the biomass of organisms as you move along the food chain?
2. What does a pyramid of biomass show?
3. State three ways in which energy is lost in food chains
4. Explain where the food chain originally gets its energy from
5. Why do fast-moving predators need a large amount of food?

**B1.6 Waste materials from plants and animals**

**B1.6.1 Decay processes**

1. What are the three main conditions needed for decay?
2. Describe the difference between a decomposer and a detritivore
3. What does saprotrophic feeding mean?

**B1.6.2 The carbon cycle**

1. Describe the ways in which carbon is released into the atmosphere
2. How are the actions of humans leading to an imbalance in the carbon cycle?

**B1.7 Genetic variation and its control**

**B1.7.1 Why organisms are different**

1. What is the difference between DNA, genes and chromosomes?
2. State two human characteristics that are determined by the environment
3. State two human characteristics that are determined by genes
4. State two human characteristics that are determined by the environment **and** genes

**B1.7.2 Reproduction**

1. Explain why you often resemble both of your parents
2. What are the two different types of reproduction and describe the differences between them
3. State two advantages of producing plants by taking cuttings
4. Why are cuttings taken from a plant genetically identical to the parent and to each other?
5. Describe the process of adult cell cloning
6. Describe the process of embryo transplants
7. Describe the process of tissue culturing
8. What are the social and ethical issues around animal cloning?
9. Describe how scientists transfer one gene from an organism to another organism
10. What are the advantages and disadvantages of GM crops?

**B1.8 Evolution**

**B1.8.1 Evolution**

1. What are the three different kingdoms?
2. What are the features of each of the three kingdoms?
3. Explain why humans are classed as animals
4. Explain what ‘survival of the fittest’ means
5. White moths are more visible on dark branches than dark moths. Explain why white moths are rare in areas with dark trees
6. Give three reasons why Darwin’s idea of natural selection was not immediately accepted
7. What are the main differences between Lamarck and Darwin’s idea of evolution