

The Biosphere

Investigating an Ecosystem	General Level	Presentation	Credit Level	Presentation
	<ul style="list-style-type: none"> identify habitat, animals and plants as the main parts of an ecosystem 	The Biosphere - Living Organisms		
	<ul style="list-style-type: none"> give an example of a technique which might be used for sampling organisms, and describe its use 	The Biosphere - Living Organisms	<ul style="list-style-type: none"> identify a possible source of error that might accompany a sampling technique and explain how it might be minimised 	The Biosphere - Living Organisms
	<ul style="list-style-type: none"> identify two abiotic factors. give an example of a technique which might be used to measure an abiotic factor and describe its use 	The Biosphere - Living Organisms	<ul style="list-style-type: none"> identify a possible source of error that might accompany a measurement technique and explain how it might be minimised 	The Biosphere - Living Organisms
	<ul style="list-style-type: none"> state the effect an abiotic factor has on the distribution of organisms 	The Biosphere - Living Organisms	<ul style="list-style-type: none"> explain possible mechanisms by which abiotic factors might influence the distribution of organisms 	The Biosphere - Living Organisms

How it Works	<ul style="list-style-type: none"> describe what is meant by habitat, population, community and ecosystem 	The Biosphere - Living Organisms		
	<ul style="list-style-type: none"> describe what is meant by producer and consumer 	The Biosphere - Living Organisms		
	<ul style="list-style-type: none"> give an example of both a food chain and food web 	The Biosphere - Living Organisms	<ul style="list-style-type: none"> explain possible effects of the removal of one species on the remaining organisms in a food web 	The Biosphere - Living Organisms
	<ul style="list-style-type: none"> state that the arrows in a food web diagram indicate the direction of energy flow state 2 ways in which energy can be lost from a food web 	The Biosphere - Living Organisms	<ul style="list-style-type: none"> explain what is meant by the terms pyramid of numbers/biomass 	The Biosphere - Living Organisms
	<ul style="list-style-type: none"> state that the growth rate of a population depends on birth and death rates 	The Biosphere - Living Organisms The Biosphere – Human Impact	<ul style="list-style-type: none"> describe the growth curve of a population under ideal conditions 	The Biosphere - Living Organisms The Biosphere – Human Impact
	<ul style="list-style-type: none"> state 3 factors which can limit the growth of a population 	The Biosphere – Human Impact	<ul style="list-style-type: none"> explain the growth curve of a population under ideal conditions 	The Biosphere – Human Impact
	<ul style="list-style-type: none"> state that competition occurs when organisms have a need for the same resources describe some effects of competition 	The Biosphere - Living Organisms		
	<ul style="list-style-type: none"> explain the importance of nutrient cycles to the organisms of an ecosystem 	The Biosphere - Living Organisms The Biosphere – Decay and Recycling	<ul style="list-style-type: none"> describe the sequence of processes in the nitrogen cycle 	The Biosphere – Decay and Recycling

Control and Management	General Level	Presentation	Credit Level	Presentation
	<ul style="list-style-type: none"> state that pollution affects air, fresh water, sea and land state that the main sources of pollution are domestic, agricultural and industrial, giving an example of a pollutant from each 	The Biosphere – Human Impact	<ul style="list-style-type: none"> explain an adverse effect of using fossil fuels and nuclear power as energy sources 	The Biosphere – Decay and Recycling
	<ul style="list-style-type: none"> give an example of one way in which pollution may be controlled 	The Biosphere – Human Impact		
	<ul style="list-style-type: none"> state that organic waste is a food source for microorganisms describe the effect of increased numbers of microorganisms on the oxygen available to other organisms 	The Biosphere – Decay and Recycling The Biosphere - Living Organisms	<ul style="list-style-type: none"> explain the relationship between level of pollution with organic waste, numbers of microorganisms, oxygen concentration and numbers of species explain what is meant by “indicator species” 	The Biosphere – Decay and Recycling The Biosphere - Living Organisms The Biosphere – Human Impact
	<ul style="list-style-type: none"> give 2 examples of poor management of natural resources and suggest possible improvements describe how the effect of poor management of natural resources can produce problems 	The Biosphere – Human Impact	<ul style="list-style-type: none"> explain how components of an ecosystem are controlled in either agriculture or forestry 	The Biosphere – Decay and Recycling

The World of Plants

	General Level	Presentation	Credit Level	Presentation
Introducing Plants	<ul style="list-style-type: none"> give examples of advantages of there being a wide variety of plants 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> explain possible consequences to man and other animals of a reduction in the variety of species 	The World of Plants - Healthy Growth
	<ul style="list-style-type: none"> describe 3 specialised uses of plants 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> describe a production or refining process, eg malting barley, rape seed, raspberries, timber describe two potential uses of plants or plant products eg new medicines, new food sources 	The World of Plants - Healthy Growth

Growing Plants	<ul style="list-style-type: none"> describe the functions of three main parts of the seed of a dicotyledon, ie seed coat, embryo, food store 	The World of Plants - Reproduction		
	<ul style="list-style-type: none"> describe the effect of temperature and the availability of water and oxygen on germination 	The World of Plants - Reproduction	<ul style="list-style-type: none"> describe the changes in percentage germination that occur over a range of temperatures 	The World of Plants - Reproduction
	<ul style="list-style-type: none"> describe the functions of the parts of flowers, ie sepal, petal, stamen, anther, stigma, ovary, nectary describe methods of pollination describe fertilisation and fruit formation 	The World of Plants - Reproduction	<ul style="list-style-type: none"> explain the structure of wind and insect-pollinated flowers in relation to sexual reproduction describe the growth of the pollen tube and fusion of gametes 	The World of Plants - Reproduction
			<ul style="list-style-type: none"> describe one example of each of the following different dispersal mechanisms: wind, animal – internal, animal – external 	The World of Plants - Reproduction
	<ul style="list-style-type: none"> describe ways of propagating flowering plants artificially by cuttings and grafting 	The World of Plants - Reproduction	<ul style="list-style-type: none"> explain the advantages to man of artificial propagation in flowering plants describe what is meant by the term “clone” 	The World of Plants - Reproduction
	<ul style="list-style-type: none"> describe asexual reproduction by runners and tubers 	The World of Plants - Reproduction	<ul style="list-style-type: none"> describe the advantages of both sexual and asexual reproduction to plants 	

Making Food	<ul style="list-style-type: none"> explain the need for transport systems in a plant describe the pathways of movement of water and food in xylem and phloem 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> describe the structure of phloem and xylem and identify other functions of the transport system 	The World of Plants - Healthy Growth
	<ul style="list-style-type: none"> state that plants take in carbon dioxide from the air through stomata which can open and close 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> describe the external features and internal structure (epidermis, mesophylls, veins) of a leaf in relation to its function in gas exchange 	The World of Plants - Healthy Growth
	<ul style="list-style-type: none"> state that water vapour is lost through stomata 	The World of Plants - Healthy Growth		

	General Level	Presentation	Credit Level	Presentation
Making Food	<ul style="list-style-type: none"> state that green plants make their own food which may be stored as starch 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> describe the fate of carbon dioxide as structural and storage carbohydrates in plants and as energy sources 	The World of Plants - Healthy Growth
	<ul style="list-style-type: none"> state that green plants convert light energy to chemical energy using chlorophyll describe the process of photosynthesis in terms of raw materials and products 	The World of Plants - Healthy Growth	<ul style="list-style-type: none"> explain what is meant by a limiting factor and describe the main limiting factors in the process of photosynthesis 	The World of Plants - Healthy Growth

Animal Survival

				General Level	Presentation	Credit Level	Presentation
The Need for Food		<ul style="list-style-type: none"> explain in simple terms why food is required by animals 	Animal Survival The Biosphere - Living Organisms	<ul style="list-style-type: none"> state the chemical elements present in carbohydrates, proteins and fats describe the simple structure of carbohydrates, proteins and fats in terms of simple sugars, amino acids, fatty acids and glycerol 	Animal Survival		
		<ul style="list-style-type: none"> state that digestion is the breakdown of large particles of food into smaller particles to allow absorption into the blood stream through the small intestine wall 	Animal Survival	<ul style="list-style-type: none"> explain that digestion involves the breakdown of insoluble food substances into soluble food substances 	Animal Survival		
		<ul style="list-style-type: none"> describe the role of different types of teeth in the mechanical breakdown of food in a herbivore, a carnivore and an omnivore such as a human 	Animal Survival				
		<ul style="list-style-type: none"> identify in a diagram/model the main parts of the mammalian alimentary canal and associated organs (mouth, salivary glands, oesophagus, stomach, pancreas, liver, gall bladder, small intestine, large intestine, appendix, rectum and anus) 	Animal Survival	<ul style="list-style-type: none"> state the sites of production of the main digestive juices in a mammal (salivary glands, stomach, pancreas, liver, small intestine) explain the mechanism of peristalsis explain how the contractions of the stomach help in the chemical breakdown of food 	Animal Survival		
		<ul style="list-style-type: none"> state that different enzymes are responsible for the breakdown of carbohydrates, proteins and fats 	Animal Survival	<ul style="list-style-type: none"> give an example of an amylase, a protease and a lipase. State their substrates and products 	Animal Survival		
		<ul style="list-style-type: none"> explain how the structure of the small intestine is related to its function 	Animal Survival	<ul style="list-style-type: none"> explain how the structures of a villus, including the lacteal and the blood capillaries, are related to the absorption and transport of food 	Animal Survival		
		<ul style="list-style-type: none"> describe the role of the large intestine in water absorption and elimination 	Animal Survival				
	Reproduction		<ul style="list-style-type: none"> describe the main features of sperm and eggs 	Animal Survival			
		<ul style="list-style-type: none"> state that in some fish, sperm are deposited in water adjacent to the eggs and that in mammals, sperm are deposited in the body of the female describe the process of fertilisation 	Animal Survival	<ul style="list-style-type: none"> explain the importance of internal fertilisation to land living animals 	Animal Survival		
		<ul style="list-style-type: none"> state that sperm cells are produced in the testes. state that eggs are produced in ovaries and are released into oviducts, where fertilisation takes place 	Animal Survival				

	General Level	Presentation	Credit Level	Presentation
Reproduction	<ul style="list-style-type: none"> state that in fish, eggs are protected by flexible coverings and that the embryos obtain food from enclosed yolk describe how the fertilised egg passes down the oviduct and becomes attached to the wall of the uterus, develops in fluid of the amniotic sac and obtains food from the maternal circulation 	Animal Survival	<ul style="list-style-type: none"> explain the relationship between the number of eggs/young produced and the degree of protection afforded during fertilisation and development in fish and mammals describe the structure and function of the placenta 	Animal Survival
	<ul style="list-style-type: none"> state that in a fish, like the trout, the young emerge from the eggs able to maintain themselves 	Animal Survival		
	<ul style="list-style-type: none"> state that at birth, the young of mammals are dependent on the adult for care and protection 			

Water and Waste	<ul style="list-style-type: none"> identify the ways in which a mammal gains and loses water 	Animal Survival		
	<ul style="list-style-type: none"> state that the kidneys are the main organs for regulating the water content in a mammal 	Animal Survival	<ul style="list-style-type: none"> explain the role of ADH in the regulation of water balance 	Animal Survival
	<ul style="list-style-type: none"> identify the positions, and state the functions, of: the kidney, renal arteries and veins, ureter, and bladder state that essential kidney functions are filtration of blood and reabsorption of useful materials such as glucose state that urea is a waste product removed in the urine 	Animal Survival	<ul style="list-style-type: none"> explain the process of urine production using a simple diagram of the nephron, to include the Bowman's capsule, glomerulus, blood capillaries and collecting duct state the source of urea in the body and describe how urea is transported to the kidneys 	Animal Survival
	<ul style="list-style-type: none"> explain the implications of damage to the kidneys by accidents or disease 	Animal Survival	<ul style="list-style-type: none"> describe the relative benefits and limitations of replacement and "artificial" kidneys 	Animal Survival

Responding to the Environment	<ul style="list-style-type: none"> give examples of environmental factors which affect behaviour describe the response of an animal to change in one environmental factor 		<ul style="list-style-type: none"> explain the significance of given examples of response to environmental stimuli in the life of the organism concerned 	
	<ul style="list-style-type: none"> describe examples of rhythmical behaviour and in each case identify the external trigger stimulus 		<ul style="list-style-type: none"> explain the significance of given examples of rhythmical behaviour in the life of the organism concerned 	

Investigating Cells

	General Level	Presentation	Credit Level	Presentation
Movement	<ul style="list-style-type: none"> state that cells are the basic units of living things 	Investigating Cells - Life's Basic Units		
	<ul style="list-style-type: none"> explain the purpose of staining animal and plant cells 	Investigating Cells - Life's Basic Units		
	<ul style="list-style-type: none"> describe the structural similarities of and differences between animal and plant cells 	Investigating Cells - Life's Basic Units		
Investigating Diffusion	<ul style="list-style-type: none"> state that a substance can diffuse from a high concentration to a low one 	Investigating Cells - Cell Activity	<ul style="list-style-type: none"> explain the importance of diffusion to organisms 	Investigating Cells - Cell Activity
	<ul style="list-style-type: none"> give examples of substances which enter and leave the cell by diffusion, eg dissolved food, oxygen, carbon dioxide and water state that the cell membrane controls the passage of substances into and out of the cell 	Investigating Cells - Cell Activity		
	<ul style="list-style-type: none"> identify osmosis as a "special case" of the diffusion of water 	Investigating Cells - Cell Activity	<ul style="list-style-type: none"> explain osmosis in terms of a selectively permeable membrane and of a concentration gradient 	Investigating Cells - Cell Activity
			<ul style="list-style-type: none"> explain observed osmotic effects in plants and in animal cells in terms of the concentration of water in the solutions involved 	Investigating Cells - Cell Activity
Investigating Cell Division	<ul style="list-style-type: none"> state that cell division is a means of increasing the number of cells in an organism state that the nucleus of the cell controls cell activities including division 	Investigating Cells - Life's Basic Units		
	<ul style="list-style-type: none"> state that each of the two cells produced by cell division has a complete set of chromosomes and the same information 	Investigating Cells - Life's Basic Units	<ul style="list-style-type: none"> describe the stages of mitosis explain why it is important that the chromosome complement of daughter cells in multicellular organisms is maintained 	Investigating Cells - Life's Basic Units
	<ul style="list-style-type: none"> identify the correct sequence of stages of mitosis 	Investigating Cells - Life's Basic Units		
Investigating Enzymes	<ul style="list-style-type: none"> explain why enzymes are required for the functioning of living cells explain the meaning of the term "catalyst" 	Investigating Cells - Cell Activity	<ul style="list-style-type: none"> explain the term "specific" as applied to enzymes and their substrates 	Investigating Cells - Cell Activity
	<ul style="list-style-type: none"> give an example of an enzyme involved in the chemical breakdown of a substance 	Investigating Cells - Cell Activity Animal Survival	<ul style="list-style-type: none"> explain the term "optimum" as applied to the range of conditions in which enzymes operate 	Investigating Cells - Cell Activity
	<ul style="list-style-type: none"> give an example of an enzyme involved in synthesis 	Investigating Cells - Cell Activity		

	General Level	Presentation	Credit Level	Presentation
Investigating Enzymes	<ul style="list-style-type: none"> state that enzymes are proteins describe the effect of temperature on enzyme activity describe the effect of a range of pH on the activity of pepsin and catalase 	Investigating Cells - Cell Activity Animal Survival		

Investigating Aerobic Respiration	<ul style="list-style-type: none"> state three reasons why living cells need energy 	The Body in Action - The Need for Energy		
			<ul style="list-style-type: none"> state that fats and oils contain more chemical energy per gram than carbohydrates or protein 	The Body in Action - The Need for Energy Animal Survival
	<ul style="list-style-type: none"> state that cells need oxygen to release energy from food during aerobic respiration describe aerobic respiration in terms of a word equation 	The Body in Action - The Need for Energy		
	<ul style="list-style-type: none"> state that carbon dioxide is given off by cells during tissue respiration and is derived from food 	The Body in Action - The Need for Energy		
	<ul style="list-style-type: none"> state that heat energy may be released from cells during respiration 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> explain the importance of energy released from food during respiration to the metabolism of cells 	The Body in Action - The Need for Energy Animal Survival

The Body in Action

	General Level	Presentation	Credit Level	Presentation
Movement	<ul style="list-style-type: none"> state that the skeleton provides a framework for support and muscle attachment state that the skeleton protects the heart, lungs, brain and spinal cord 	The Body in Action - Movement		
	<ul style="list-style-type: none"> describe the range of movements allowed by a ball and socket joint and by a hinge joint state the functions of ligaments and cartilage at a joint 	The Body in Action - Movement	<ul style="list-style-type: none"> describe the structure of a synovial joint and state the functions of its parts 	The Body in Action - Movement
	<ul style="list-style-type: none"> state that bone is composed of flexible fibres and hard minerals 	The Body in Action - Movement	<ul style="list-style-type: none"> state that bone is formed by living cells 	The Body in Action - Movement
	<ul style="list-style-type: none"> state that muscles are attached to bones by tendons 	The Body in Action - Movement	<ul style="list-style-type: none"> explain why tendons are inelastic 	The Body in Action - Movement
	<ul style="list-style-type: none"> describe how movement is brought about by muscle contraction 	The Body in Action - Movement	<ul style="list-style-type: none"> explain the need for a pair of opposing muscles at a joint 	The Body in Action - Movement

The Need for Energy	<ul style="list-style-type: none"> state the effects of the imbalance between energy input and output 	The Body in Action - The Need for Energy		
	<ul style="list-style-type: none"> state that oxygen is absorbed and carbon dioxide released in breathing 	The Body in Action - The Need for Energy		
	<ul style="list-style-type: none"> describe the internal structure of the lungs 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> describe the mechanism of breathing in humans explain the function of cilia, cartilage and mucus in the trachea and bronchi describe gas exchange between the air sacs and the surrounding blood vessels describe the features which make lungs efficient gas exchange structures 	The Body in Action - The Need for Energy
	<ul style="list-style-type: none"> identify the four chambers of the heart describe the path of blood flow through the heart and its associated blood vessels describe the positions and function of the heart valves explain the difference in thickness of the walls of the ventricles state that the heart obtains its blood supply from coronary arteries 	The Body in Action - The Need for Energy		

	General Level	Presentation	Credit Level	Presentation
The Need for Energy	<ul style="list-style-type: none"> state that blood leaves the heart in arteries, flows through capillaries and returns to the heart in veins state that the pulse indicates that blood is flowing through an artery 	The Body in Action - The Need for Energy		
	<ul style="list-style-type: none"> describe the function of red blood cells and plasma in the transport of respiratory gases and food 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> explain the function of haemoglobin in the transport of oxygen 	The Body in Action - The Need for Energy
	<ul style="list-style-type: none"> describe gas exchange between body cells and the surrounding capillaries 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> describe the features of a capillary network which allow efficient gas exchange 	The Body in Action - The Need for Energy

Coordination	<ul style="list-style-type: none"> state that judgement of distance is more accurate using two eyes rather than one 	The Body in Action - Co-ordination	explain the relationship between judgement of distance and binocular vision	The Body in Action - Co-ordination
	<ul style="list-style-type: none"> identify the cornea, iris, lens, retina, optic nerve and state their functions 	The Body in Action - Co-ordination		
	<ul style="list-style-type: none"> state that judgement of direction of sound is more accurate using two ears rather than one 			
	<ul style="list-style-type: none"> identify the ear drum, middle ear bones, cochlea, auditory nerve and semi-circular canals and state their functions 	The Body in Action - Co-ordination	explain how the arrangement of semi-circular canals is related to their function	The Body in Action - Co-ordination
	<ul style="list-style-type: none"> state that the nervous system is composed of the brain, spinal cord and nerves 	The Body in Action - Co-ordination		
	<ul style="list-style-type: none"> state that the nerves carry information from the senses to the central nervous system and from the central nervous system to the muscles 	The Body in Action - Co-ordination	<ul style="list-style-type: none"> describe how a reflex action works, using a simple model of a reflex arc state that the central nervous system sorts out information from the senses and sends messages to the muscles 	The Body in Action - Co-ordination
			<ul style="list-style-type: none"> identify the cerebrum, cerebellum and the medulla and state their functions in simple terms 	The Body in Action - Co-ordination

Changing Levels of Performance	General Level	Presentation	Credit Level	Presentation
	<ul style="list-style-type: none"> state that continuous or rapidly repeated contraction of muscle results in fatigue state that muscle fatigue results from a lack of oxygen and a build up of lactic acid 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> explain muscle fatigue in terms of anaerobic respiration 	The Body in Action - The Need for Energy
	<ul style="list-style-type: none"> explain why pulse rate and breathing rate increase with exercise 	The Body in Action - The Need for Energy		<ul style="list-style-type: none"> explain why pulse rate and breathing rate increase with exercise
	<ul style="list-style-type: none"> state that with exercise the pulse rate, breathing rate and lactic acid level rise less in an athlete than in an untrained person state that recovery time is the time taken to return to normal levels of pulse rate, breathing rate and lactic acid describe how recovery time can be used as an indication of physical fitness 	The Body in Action - The Need for Energy	<ul style="list-style-type: none"> state that training improves the efficiency of the lungs and circulation. explain the relationship between the effects of training and recovery time 	The Body in Action - The Need for Energy

Inheritance

	General Level	Presentation	Credit Level	Presentation
Variation	<ul style="list-style-type: none"> state that a species is a group of interbreeding organisms whose offspring are fertile 	Variation		
	<ul style="list-style-type: none"> state that variation can occur within a species 	Variation		
	<ul style="list-style-type: none"> give examples of continuous and discontinuous variation 	Variation	<ul style="list-style-type: none"> explain what is meant by continuous and discontinuous variation 	Variation

What is Inheritance?	<ul style="list-style-type: none"> state that certain characteristics are determined by genetic information received from the parents and give examples, from animals and plants 	Variation Inheritance		
	<ul style="list-style-type: none"> identify examples of phenotypes of the same characteristic identify examples of truebreeding, dominant and recessive characteristics from the numbers and phenotypes of given crosses 	Inheritance		
	<ul style="list-style-type: none"> identify generations as P, F1 and F2 from given examples of crosses state that the phenotypes of the F1 in a true-breeding cross are uniform 	Inheritance	<ul style="list-style-type: none"> state that the parents in experimental monohybrid crosses are usually truebreeding and show different phenotypes of the same characteristic 	Inheritance
	<ul style="list-style-type: none"> state that each body cell has two matching sets of chromosomes. state that sex cells are called gametes. state that the reduction of the number of chromosomes to a single set occurs during gamete formation. state that each sex cell carries one set of chromosomes. describe how a complete double set of chromosomes is achieved at fertilisation 	Variation Inheritance	<ul style="list-style-type: none"> state that genes are parts of chromosomes 	Variation Inheritance
	<ul style="list-style-type: none"> state that genes are parts of chromosomes state that a characteristic is controlled by two forms of a gene state that each parent contributes one of the two forms state that each gamete carries one of the two forms of the gene state the meaning of the word genotype 	Variation Inheritance	<ul style="list-style-type: none"> state that different forms of a gene are called alleles explain monohybrid crosses in terms of genotypes explain differences between observed and predicted figures in monohybrid crosses 	Inheritance
	<ul style="list-style-type: none"> state that the sex of a child is determined by specific chromosomes called X and Y chromosomes state that in humans, each male gamete may have an X or a Y chromosome, while each female gamete has an X chromosome 	Inheritance		

	General Level	Presentation	Credit Level	Presentation
Genetics and Society	<ul style="list-style-type: none"> give two examples of an improved characteristic resulting from selective breeding, eg increased yield, increased disease resistance, or increased growth 	Variation	<ul style="list-style-type: none"> describe two examples, one plant, one animal, of the enhancement of a characteristic through selective breeding 	Variation
	<ul style="list-style-type: none"> describe one example of a human condition caused by a chromosome mutation, eg Down's Syndrome state that amniocentesis can be used to detect chromosome characteristics before birth. 	Inheritance	<ul style="list-style-type: none"> give an example of a chromosome mutation, advantageous to man, in a plant or animal of economic importance give an example of a factor which can influence the rate of mutation in an organism 	Variation

Biotechnology

	General Level	Presentation	Credit Level	Presentation
Living Factories	<ul style="list-style-type: none"> state that the raising of dough and the manufacture of beer and wine depend on the activities of yeast 	Biotechnology		
	<ul style="list-style-type: none"> identify yeast as a singlecelled fungus, which can use sugar as food 	Biotechnology		
	<ul style="list-style-type: none"> using a word equation, state the process of fermentation of glucose by yeast 		<ul style="list-style-type: none"> describe the process of anaerobic respiration and compare it will aerobic respiration 	
			<ul style="list-style-type: none"> describe how commercial brewers provide the best growing conditions for yeast. explain what is meant by the term “batch processing” 	Biotechnology
			<ul style="list-style-type: none"> explain the need for malting of barley before use by the brewing industry 	
	<ul style="list-style-type: none"> state that the manufacture of cheese and yoghurt depends on the activities of bacteria 	Biotechnology		
	<ul style="list-style-type: none"> state that the souring of milk is a fermentation process 		<ul style="list-style-type: none"> explain the souring of milk in terms of bacterial fermentation of lactose 	
Problems and Profit with Waste	<ul style="list-style-type: none"> describe some examples of the damage caused to the environment by disposal of untreated sewage. give examples of diseases which may be spread by untreated sewage 			
	<ul style="list-style-type: none"> describe the principal precautions to be taken during laboratory work with microorganisms. explain the importance of such precautions in biotechnological processes whenever relevant 		<ul style="list-style-type: none"> explain the precautions which are taken during manufacturing processes with reference to resistant fungal and bacterial spores 	
			<ul style="list-style-type: none"> describe the part played by bacteria in the process of decay and recycling of carbon and nitrogen explain the process of decay in terms of the energy requirements of micro-organisms 	
	<ul style="list-style-type: none"> state that the main process in the treatment of sewage is its breakdown by the action of decay micro-organisms to products harmless to the environment describe how the oxygen required by micro-organisms can be provided during sewage treatment 		<ul style="list-style-type: none"> explain why complete breakdown of sewage is only possible in aerobic conditions explain why a range of microorganisms is needed to break down the range of materials in sewage 	

Problems and Profit with Waste	General Level	Presentation	Credit Level	Presentation
	<ul style="list-style-type: none"> give 2 examples of useful products and the waste materials from which they are gained through the action of micro-organisms and explain the economic importance of this technology 		<ul style="list-style-type: none"> explain the advantages of upgrading waste in terms of increasing its available energy or protein levels 	
	<ul style="list-style-type: none"> state that alcohol and methane are products of fermentation explain the advantages of deriving fuel through fermentation rather than from fossil sources 	The Biosphere – Decay and Recycling		
	<ul style="list-style-type: none"> state that under suitable conditions, micro-organisms can reproduce very rapidly by asexual means state that micro-organisms may be harvested to provide protein rich food for animals or man 			

Reprogramming Microbes	<ul style="list-style-type: none"> state that the normal control of bacterial activity depends on its chromosomal material 	Biotechnology	<ul style="list-style-type: none"> explain genetic engineering in terms of manipulation of chromosomal material 	Biotechnology
	<ul style="list-style-type: none"> state that pieces of chromosome can be transferred from a different organism and so allow bacteria to make new substances 	Biotechnology	<ul style="list-style-type: none"> state that as a result of genetic engineering, bacteria may produce increased quantities of products and speed up processes. explain some of the advantages of genetic engineering, compared with selective breeding, in producing new genotypes to create the best organism for a particular function 	Biotechnology
	<ul style="list-style-type: none"> give some examples of the products of genetic engineering and their applications, eg insulin 	Biotechnology	<ul style="list-style-type: none"> explain the ever increasing need for insulin produced by biotechnology 	Biotechnology
	<ul style="list-style-type: none"> state that “biological” detergents contain enzymes produced by bacteria. 	Biotechnology	<ul style="list-style-type: none"> describe the advantages of using the low-temperature enzyme reactions of “biological” detergents explain the action of “biological” detergents in terms of digestion by enzymes 	
	<ul style="list-style-type: none"> state that an antibiotic is a chemical which prevents growth of micro-organisms 	Biotechnology	<ul style="list-style-type: none"> explain why a range of antibiotics is needed in the treatment of bacterial diseases 	Biotechnology
			<ul style="list-style-type: none"> describe the advantages of using immobilization techniques. explain how continuous-flow processing is allowed by using immobilization and the advantages this has over batch processing 	Biotechnology