

What is a classification system based on?	It is based on morphological features or DNA analysis.
Name the 5 kingdoms	Bacteria, Single celled organisms, plants, fungi and animals.
Give the hierarchical order for classification.	Kingdom, phylum, class, order, family, genus and species
What do animals compete for?	Food, mates, space and water.
Define biodiversity	Biodiversity is the variety of different species and numbers of individuals within those species in an area.
Why is biodiversity important?	Biodiversity is important as it provides food, potential foods, industrial materials and new medicines.
Give some examples of how biodiversity can be conserved	Seed banks, national parks and captive breeding programmes
Describe how quadrats can be used to investigate the abundance of a species.	Measure the area. Randomise coordinates. Count the number of the organisms in the quadrat. Calculate a mean and then multiply by the area of the site.
Describe how a line transect can be used to investigate the change in abundance of a species .	Place a tape measure on the ground. At regular intervals put the quadrat down and count the number of the organism within it.
Describe how to count the number of a moving organism.	Use the capture/recapture technique.
What assumptions are made when using the capture /recapture method ?	There is no death, immigration, emigration and marking does not affect the chance of survival.
Define an alien species.	A species that has been introduced into an area in which they do not naturally occur.
Define biological control	The control of a pest by introduction of a natural enemy or predator
Why must research take place before using biological control?	To assess the effects and to ensure it does not become a pest .
What are chromosomes?	They are linear arrangements of genes found in pairs in the nucleus

What is the function of mitosis?	Growth, repair and asexual reproduction.
What is the function of meiosis?	Formation of gametes for sexual reproduction.
Explain the process of mitosis	The genetic material is copied and then the cell divides into two genetically identical cells.
Explain the process of meiosis	Copies of genetic information are made. The cell then divides twice to make four gametes, each has a single set of chromosomes.
What is cancer the result of?	Uncontrolled mitosis.
What are stem cells?	Cells from human embryos and bone marrow that are capable of changing into specialised cells.
Why are stem cells so important in modern medicine?	They can replace faulty cells to cure conditions like paralysis.
What are the benefits of using your own stem cells?	No rejection, no need to find a donor, no need for tissue typing.
What are the ethical issues surrounding use of stem cells?	The cells come from embryos which are a potential human life.
Describe the structure of DNA.	Two long chains of alternating sugar and phosphate connected by bases twisted into a double helix.
Name the four bases.	Adenine, thymine, cytosine and guanine.
Why is the order of the bases important?	The order of the bases forms the code which determines the order in which different amino acids are linked together to form different proteins.
What is the triplet code?	The sequence of three bases which identifies a particular amino acid.
What is the process of genetic profiling?	It involves cutting the DNA into short pieces which are then separated into bands. The pattern of bands can then be compared for criminal, paternity and classification purposes.
What are the ethical issues surrounding genetic profiling?	The information could be kept on a police database, passed on to life insurance companies and used in job applications.

What is a gene?	A section of DNA that determines an inherited characteristic.
What is an allele?	A different form of an individual gene.
What is a gamete?	A sex cell, egg and sperm that contains half the number of chromosomes of a body cell.
In humans if you have an XY chromosome pair, what sex are you?	Male
What is a dominant allele?	If a dominant allele is present that characteristic will be expressed.
What is a recessive allele?	Two recessive alleles need to be present for the characteristic to be expressed.
Define genotype and phenotype.	Genotype is the alleles present eg Bb and phenotype is the characteristic eg brown hair.
What is F1 and F2?	F1 is the first filial set of offspring born and F2 the second generation.
What is genetic modification?	The artificial transfer of genes from one organism to another.
Give some advantages of genetic modification.	Disease resistance and increased yield.
Give some disadvantages of genetic modification.	Unknown effects on health. Transfer of the gene to other species could have effects on the environment.
Which type of variation shows a large range of differences?	Continuous.
Which type of variation produces clones?	Asexual reproduction.
What is a mutation?	A random change in DNA.
What can increase mutation rates?	Ionising radiation; the greater the dose the greater the chance of mutation.

What is cystic fibrosis?	A recessive inherited disease that causes the production of thick mucus that blocks the bronchioles.
How is cystic fibrosis treated?	It is treated by gene therapy. The introduction of genes via an inhaler.
Why are scientists researching the human genome?	They can use the information to develop new ways to treat, cure or even prevent disease.
What is natural selection?	Individuals with characteristics adapted to their environment are more likely to survive and breed successfully passing their genes on to their offspring.
Who proposed the theory of natural selection?	Charles Darwin and Alfred Wallace
Give two examples of ongoing evolution.	Antibiotic resistance in bacteria and warfarin resistance in rats.
Why do species become extinct?	The process of natural selection has been too slow for the organisms to adapt to new environmental conditions.
Which organs control blood glucose levels?	The pancreas releases insulin and glucagon. The liver and muscles respond to them.
What is diabetes?	A disease in which a person has high blood sugar levels. Type 1 is due to lack of insulin production. Type 2 is due to body cells not responding to insulin.
What solution is used to test for glucose?	Benedicts. It turns yellow/red when sugar is present.
Name the stimuli for sense organs	light, sound, touch, temperature and chemicals.
What does the CNS consist of?	Brain and spinal cord.
What are the properties of reflex actions?	fast, automatic and some are protective eg blinking and pupil size.
Higher- Give the components of the reflex arc.	Stimulus, receptor, sensory neurone, relay neurone, motor neurone, effector and response.
What is a synapse?	A gap between neurones over which the message is transferred by a chemical messenger.

What is homeostasis?	Keeping temperature , pH, sugar and water levels within a narrow range.
What are hormones?	Chemical messengers secreted by glands and carried in the blood.
What happens when blood sugars are high?	The pancreas releases insulin which causes the liver to convert glucose to glycogen and store it.
What is involved in temperature regulation?	Change in diameter of blood vessels, sweating, erection of hairs and shivering to generate heat.
Give the long term effects of alcohol on the body	Liver disease, circulatory and heart disease.
Name the 4 types of microbe.	Bacteria, fungi , viruses and protists.
Define a pathogen.	A micro-organism that causes disease.
What does a bacterial cell consist of?	A cell wall, cell membrane, cytoplasm and no distinct nucleus.
What does a virus consist of?	A number of genes surrounded by a protein coat.
How can communicable diseases be spread?	By contact, aerosol, body fluids, water, insects and contaminated food.
How does the body defend itself?	Intact skin forming a barrier, blood clots to seal wounds, phagocytes in the blood ingesting microbes and lymphocytes producing antibodies and antitoxins.
What is an antigen?	A molecule that is recognised by the immune system; foreign antigens trigger lymphocytes to produce specific antibodies.
What are antibiotics?	Medicines originally produced by living organisms, such as fungi. They can kill or prevent growth of bacteria but do not kill viruses.
What can overuse of antibiotics lead to?	Evolution of resistant bacteria such as MRSA.
What are the control measures for MRSA?	Hand washing, thorough cleaning of hospital wards, use of alcohol gels and MRSA screening.

Triple only	
Give the functions of the following; sclera, cornea, pupil and iris.	Sclera-tough outer coat, cornea-clear part of sclera to let light in, pupil-hole allowing light in, iris-muscle controlling pupil size
Give the functions of the following; lens, choroid, retina, blind spot and optic nerve.	lens- changes shape to focus light, choroid-a dark layer preventing reflection, retina-light sensitive layer, blind spot-where optic nerve leaves, optic nerve-carries impulse to brain.
What are the names of plant responses to light and gravity?	Phototropism and gravitropism.
What is the name of the plant hormones involved in its response to light and gravity?	Auxins.
What are the functions of the kidneys?	Regulation of water content of the blood and remove waste products from the blood.
Define excretion.	Excretion is the removal from the body of the waste products of metabolism.
What is ultrafiltration?	The diameter of the blood vessels entering the capillary knot are bigger than those leaving. This increases the pressure which forces small molecules like urea, glucose, salts and water
What is selectively reabsorbed?	All of the glucose, some salts and much of the water.
What can the presence of blood and glucose in the urine indicate?	Blood- kidney disease, Glucose-diabetes
What happens when water levels in the blood are low?	The brain increase secretions of ADH which causes the kidneys to reabsorb more water. The urine is more concentrated.
How does a dialysis machine work?	A dialysis machine uses a counter current system to maintain a diffusion gradient between the blood and the dialysis fluid which contains the correct concentration of glucose and salts.
How is a kidney donor chosen?	The donor needs to have a similar tissue type to prevent rejection by the body and attack by the immune system.
Give the main ways to prevent contamination in aseptic technique.	sterilise agar and petri dish, heat inoculating loop, slightly open petri dish lid, secure lid with tape, incubate at 25°C, sterilise after use.
Explain the assumption when counting colonies.	One bacterium will give rise to one colony. However, clumping can occur leading to inaccuracies in counting.

