

# Buttershaw Business and Enterprise College



## AQA Combined Science Trilogy

### Biology Paper 2 Foundation

#### Key Recall Facts

Homeostasis and Response, Inheritance, Variation and Evolution and Ecology

**Exam Date – Friday 9<sup>th</sup> June**

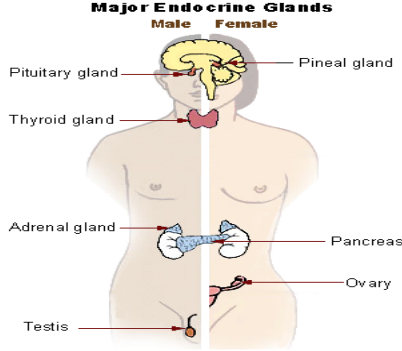
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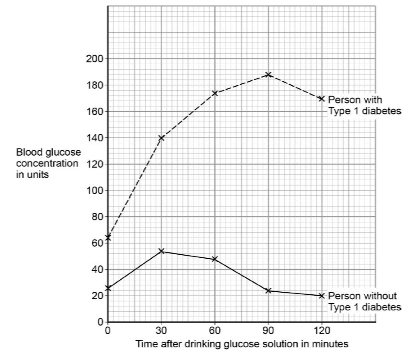
Teacher.....

## Homeostasis and Response

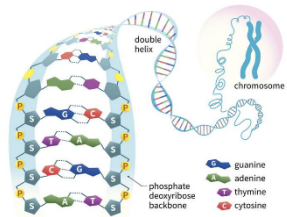
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| 1. What is homeostasis?   | Keeping internal body conditions constant  |
| 2. State 3 factors that must be kept constant   | <ul style="list-style-type: none"> <li>• Body temperature</li> <li>• Blood water levels</li> <li>• Blood glucose concentration</li> </ul>  |
| 3. State 2 reasons why conditions have to be kept constant  | <ul style="list-style-type: none"> <li>• Cells function properly</li> <li>• Enzymes function properly</li> </ul>   |
| 4. Name 2 body systems that are responsible for homeostasis   | Endocrine and nervous systems  |
| 5. Compare the nervous system to the endocrine system   | <ul style="list-style-type: none"> <li>• Both receive, coordinate and send messages</li> <li>• Nervous system produces responses quicker</li> <li>• Nervous system produces short-lived responses</li> <li>• Nervous system sends electrical impulses, whilst the endocrine system sends messages by using hormones</li> <li>• Nervous system uses nerve cells to send messages, whilst the endocrine system uses the blood to carry hormones</li> </ul> |
| 6. Describe the general steps in a response   | Stimulus → receptor → processing centre → effector → response  |
| 7. Define the following terms: -<br>a) Stimulus<br>b) Receptor<br>c) Processing centre<br>d) Effector | a) Change in environment<br>b) Detects stimulus<br>c) Processes and receives information<br>d) Brings about response   |
| 8. Define the term hormone  | Chemical released by a gland into the blood stream and affects a target organ  |
| 9. Define the term gland  | Organs that produce chemicals, such as hormones or enzymes   |
| 10. What is a reflex?   | Rapid and involuntary (automatic) response   |
| 11. Why is a reflex important?  | Ensures survival or prevents harm to an organism   |
| 12. Describe what happens at a synapse  | <ul style="list-style-type: none"> <li>• Impulse reaches the end of the first neuron</li> <li>• Neuron releases neurotransmitters into the synapse</li> <li>• Neurotransmitters diffuse across the synapse to bind to receptors on the second neuron</li> </ul>  |

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| <p>13. Why does a conscious decision take longer than a reflex?</p>            | <p>Impulse has to be processed by the brain<br/>More synapses in the brain</p>   |
| <p>14. Name different glands in the body, and the hormones they release</p>    | <p>Pituitary gland – master gland that releases lots of different hormones including FSH, LH and ADH<br/>Thyroid gland – releases thyroxine<br/>Adrenal gland – adrenaline<br/>Testes – testosterone<br/>Ovaries – oestrogen and progesterone</p>  <p>The diagram, titled 'Major Endocrine Glands', shows a human torso split vertically to compare male and female anatomy. On the male side (left), the Pituitary gland is located at the base of the brain, the Thyroid gland is in the neck, the Adrenal gland sits atop the kidney, and the Testis is in the male reproductive system. On the female side (right), the Pituitary gland is at the base of the brain, the Pineal gland is behind the hypothalamus, the Thyroid gland is in the neck, the Pancreas is in the abdominal region, the Ovary is in the female reproductive system, and the Adrenal gland sits atop the kidney.</p> |
| <p>15. Describe the effect of thyroxine on the body</p>                        | <p>Thyroxine controls the body's basal metabolic rate (sum of all the reactions in the body)</p>   |
| <p>16. What is the processing centre for controlling blood glucose levels?</p> | <p>Pancreas</p>  |
| <p>17. Describe what happens when blood glucose levels increase</p>            | <p>Pancreas detects rise in blood glucose levels<br/>The pancreas releases insulin into the blood<br/>Insulin travels to the liver, which takes up glucose from the blood and stores it as glycogen in the liver<br/>Blood glucose levels fall</p>   |
| <p>18. Compare the two types of diabetes</p>                                   | <ul style="list-style-type: none"> <li>• Type 1 occurs in younger people, whilst type 2 generally occurs when you are older.</li> <li>• Type 1 is caused by genetic factors, whereas type 2 is caused by lifestyle factors, such as obesity, diet, lack of exercise as well as genetic factors</li> <li>• Type 1 is when the pancreatic cells are destroyed, and they cannot produce insulin but in type 2, the body still produces some insulin (sometimes higher than normal), but the liver does not respond to the insulin</li> <li>• Type 1 is treated with insulin injections, whilst diet and exercise are the first form of treatment for type 2 diabetes.</li> </ul>  |

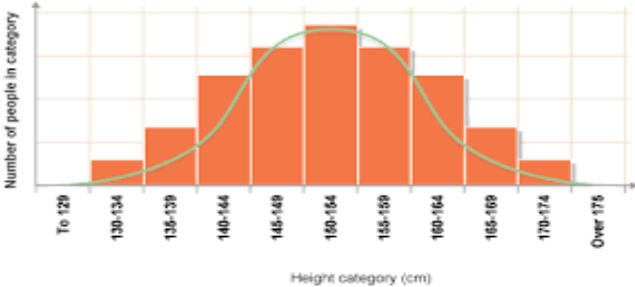
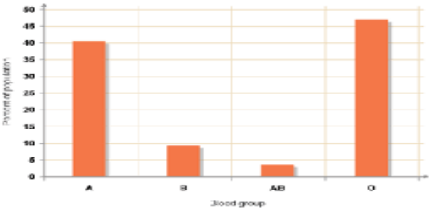
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| <p>19. How will blood glucose levels differ from a diabetic person compared to a non-diabetic before and after eating?</p> | <p>Diabetic person will have higher blood glucose levels before.</p> <p>Both levels will go up after eating.</p> <p>Non-diabetic person releases insulin, so blood glucose levels drop back to normal after 1-2 hours, whilst for the diabetic person, they will remain high</p>  |
| <p>20. Name the sex hormones in males and females</p>  | <p>Males – testosterone released by the testes</p> <p>Females – oestrogen released by the ovaries</p>   |
| <p>21. What is the role of testosterone?</p>   | <p>Causes the testes to produce sperm</p> <p>Responsible for secondary sexual characteristics, such as pubic hair, growth spurt, broad shoulders, enlarging the penis etc</p>   |
| <p>22. What are the secondary sexual characteristics in the female?</p>  | <p>Breasts enlarge, pubic hair, wider hips, growth spurt</p>  |
| <p>23. Name the 4 hormones involved in the menstrual cycle, where they are released from and their function</p>            | <p><b><u>FSH</u></b><br/>Released by the pituitary gland<br/>Causes egg to mature in the ovary</p> <p><b><u>Oestrogen</u></b><br/>Released by the ovaries<br/>Causes the lining of the uterus to thicken</p> <p><b><u>LH</u></b><br/>Released by the pituitary gland<br/>A surge in his causes ovulation (release of an egg) around day 14</p> <p><b><u>Progesterone</u></b><br/>Released by the ovaries (corpus luteum)<br/>Maintains the lining of the uterus</p> |
| <p>24. What are the 2 different types of contraception?</p>  | <p>Hormonal – prevents egg from maturing or egg being released e.g. pill, patch, implant</p> <p>Non-Hormonal – barrier method stopping the sperm reaching the egg e.g. condom, IUD, diaphragm</p>   |
| <p>25. What is the name of the hormone found in the pill?</p>  | <p>Progesterone</p>   |
| <p>26. Why is progesterone found in the pill?</p>  | <p>Inhibits FSH and LH and therefore prevents egg from maturing or egg from being released</p>  |



# Inheritance, Variation and Evolution

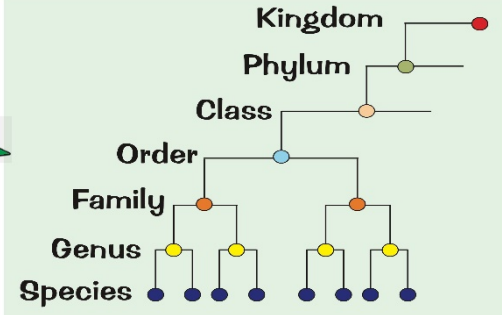
| 1. Describe sexual reproduction   | Involves 2 parents and the fusion of gametes (sex cells)   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
|---|--|---|---------|---------|------------------------------|-----|-----|---------------------------|---|---|---|-----|------|---------------------|---|---|---------------------|-----|-----|----------------------------------|-----------|---------------|----------|-------------------|-------------------|-----------------|----------------------------------|--|
| 2. What is a gamete?  | Sex cell which contains half the number of chromosomes   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 3. What are the gametes called in animals?  | Sperm cell in males<br>Egg cell in females   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 4. What are the gametes called in plants?   | Pollen is the male sex cell<br>Ovum/egg cell is female sex cell  |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 5. What is meant by fertilisation?  | This is when the nucleus of the sperm cell fuses with the nucleus of the egg cell  |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 6. Describe asexual reproduction  | Involves 1 parent and no fusion of gametes   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 7. Give examples of organisms that reproduce asexually  | <ul style="list-style-type: none"> <li>• Bacteria</li> <li>• Fungi – using spores</li> <li>• Some plants using runners (strawberry plants) or bulbs (daffodils)</li> <li>• Parasites</li> </ul>  |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 8. What are the 2 main stages of the cell cycle?  | <ul style="list-style-type: none"> <li>• Cell growth (interphase)</li> <li>• Mitosis or meiosis</li> </ul>   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 9. What happens during cell growth?   | Replicating DNA/chromosomes<br>Increasing cell organelles like ribosomes/mitochondria  |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 10. Compare mitosis and meiosis   | <p><b>Table 14.1</b> The key differences between cell division in mitosis and meiosis.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #00a0e3; color: white;"> <th></th> <th>Mitosis</th> <th>Meiosis</th> </tr> </thead> <tbody> <tr> <td>Number of cells at beginning</td> <td>One</td> <td>One</td> </tr> <tr> <td>Type of cell at beginning</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> </tr> <tr> <td>Number of cells at end (daughter cells)</td> <td>Two</td> <td>Four</td> </tr> <tr> <td>Type of cell at end</td> <td>Diploid body cell (23 pairs of chromosomes in humans)</td> <td>Haploid gamete (23 chromosomes in humans)</td> </tr> <tr> <td>Number of divisions</td> <td>One</td> <td>Two</td> </tr> <tr> <td>Identical or non-identical cells</td> <td>Identical</td> <td>Non-identical</td> </tr> <tr> <td>Used for</td> <td>Growth and repair</td> <td>Producing gametes</td> </tr> <tr> <td>Where it occurs</td> <td>Everywhere except the sex organs</td> <td>Sex organs (ovaries and testes in mammals)</td> </tr> </tbody> </table> |   | Mitosis | Meiosis | Number of cells at beginning | One | One | Type of cell at beginning | Diploid body cell (23 pairs of chromosomes in humans) | Diploid body cell (23 pairs of chromosomes in humans) | Number of cells at end (daughter cells) | Two | Four | Type of cell at end | Diploid body cell (23 pairs of chromosomes in humans) | Haploid gamete (23 chromosomes in humans) | Number of divisions | One | Two | Identical or non-identical cells | Identical | Non-identical | Used for | Growth and repair | Producing gametes | Where it occurs | Everywhere except the sex organs | Sex organs (ovaries and testes in mammals) |
|   | Mitosis  | Meiosis   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Number of cells at beginning  | One  | One   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Type of cell at beginning   | Diploid body cell (23 pairs of chromosomes in humans)  | Diploid body cell (23 pairs of chromosomes in humans) |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Number of cells at end (daughter cells)   | Two  | Four  |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Type of cell at end   | Diploid body cell (23 pairs of chromosomes in humans)  | Haploid gamete (23 chromosomes in humans)             |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Number of divisions   | One  | Two   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Identical or non-identical cells  | Identical  | Non-identical   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Used for  | Growth and repair  | Producing gametes                                     |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| Where it occurs   | Everywhere except the sex organs   | Sex organs (ovaries and testes in mammals)            |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 11. What is a zygote?   | Fertilised egg   |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 12. Name the type of cell division taking place to ensure growth of the zygote into an embryo | Mitosis  |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |
| 13. Describe the structure of DNA   | <ul style="list-style-type: none"> <li>• A polymer (long strand of monomers joined together)</li> <li>• Double stranded helix</li> </ul>    |   |         |         |                              |     |     |                           |   |   |   |     |      |                     |   |   |                     |     |     |                                  |           |               |          |                   |                   |                 |                                  |  |

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| 14.What is a chromosome?  | Thread-like structure inside the nucleus made up of DNA   |
| 15.What is a gene?  | Short section of DNA that codes for a protein   |
| 16.What is the genome?  | The entire genetic material of that organism  |
| 17.Why is the human genome project important?                   | <ul style="list-style-type: none"> <li>• Search for genes that cause disease</li> <li>• Identify genes that cause disease</li> <li>• Understand and treat genetic disorders</li> <li>• Trace human migration patterns from the past</li> </ul>  |
| 18.Define the term allele                                       | A different version of the same gene  |
| 19.How many alleles of each gene do we possess?                 | 2 – one from your mum, and one from your dad  |
| 20.Describe the difference between dominant and recessive       | <p>A dominant characteristic shows even if there is only one copy of the allele</p> <p>A recessive characteristic only shows if there are two copies of the allele</p>  |
| 21.Describe the difference between homozygous and heterozygous  | <p>Homozygous is when you have 2 copies of the same allele</p> <p>Heterozygous when both alleles are different</p>  |
| 22.Describe the difference between genotype and phenotype       | Genotype is the combination of alleles that you possess, whilst phenotype is the physical characteristics an organism has   |
| 23.What are the sex chromosomes for a male and female?          | <p>XY – male</p> <p>XX – female</p>   |
| 24.Draw a Punnett Square to show how sex (gender) is determined | <p>female gametes (eggs) X X</p> <p>male gametes (sperm) X Y</p> <p>possible combinations of gametes...</p> <p>...two males (XY) and two females (XX).</p> <p>this type of genetic diagram is called Punnett square</p>   |
| 25.Is cystic fibrosis caused by a dominant or recessive allele? | Recessive – so must have 2 copies of the allele for the disease to show   |
| 26.Describe the symptoms of cystic fibrosis                     | <p>Produces sticky mucus blocking tubes within the body due to disorder of cell membranes. This can cause...</p> <ul style="list-style-type: none"> <li>• Difficulty breathing</li> <li>• Chest infections</li> <li>• Unable to digest food – so thinner</li> <li>• Infertility (blocks sperm tubes and fallopian tubes)</li> </ul> |

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| 27.What is polydactyly?                     | A disease caused by a dominant allele leading the person having an extra finger/toe<br>If a child has polydactyly, one of the parents must also have it  |
| 28.What is embryo screening?                | Checking the genes of an embryo for a genetic disorder. Could be done before implantation into the woman’s uterus.   |
| 29.What is variation?                       | The differences in characteristics within a population   |
| 30.What are the 3 causes of variation?      | <ul style="list-style-type: none"> <li>• Inherited</li> <li>• Environment</li> <li>• Both</li> </ul>   |
| 31.What is meant by continuous variation?   | Variation that can have a range of values e.g. height, weight<br><br>   |
| 32.What is mean by discontinuous variation? | Can only have a discrete or fixed value e.g. Eye colour, blood group<br><br>   |
| 33.What is a mutation?                      | A change in DNA – leads to the formation of new phenotypes   |
| 34.When did life on Earth begin?            | About 3,500 million years ago  |
| 35.What is Evolution?                       | Change in the inherited characteristics of a population over time  |
| 36.Define the term species                  | Organisms that can breed to produce fertile offspring  |
| 37.Describe the evidence for Evolution      | <ul style="list-style-type: none"> <li>• DNA</li> <li>• Fossils – similarities in physical features</li> <li>• Natural Selection – antibiotic resistant bacteria</li> </ul>  |
| 38.Describe how fossils could be formed     | <ul style="list-style-type: none"> <li>• Parts not decayed due to unfavourable condition e.g. lack of oxygen, extremes of pH</li> <li>• Parts of bones replaced by minerals when they decay</li> <li>• Preserved traces of organisms e.g. footprint</li> </ul> |

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| 39. Why are there gaps in the fossil record?                       | Some fossils destroyed by geological activity<br>Some species were mainly soft tissue, very little bone to leave fossils  |
| 40. What causes extinction?  | <ul style="list-style-type: none"> <li>• Changes in environment e.g. global warming</li> <li>• New predator</li> <li>• New competitor</li> <li>• New disease</li> <li>• Deforestation – loss of habitat</li> </ul>  |
| 41. What are the steps in Natural Selection?                       | <ul style="list-style-type: none"> <li>• Mutation</li> <li>• Variation</li> <li>• Competition</li> <li>• Survival</li> <li>• Reproduction</li> </ul>  |
| 42. Explain how giraffes evolved to have longer necks              | <p>A mutation occurred causing a giraffe to be born with a longer neck</p> <p>This led to variation in neck lengths in the population</p> <p>Longer neck giraffes are better able to compete for food</p> <p>Therefore, more likely to survive long enough to reproduce, and pass their long neck alleles to their next generation.</p>   |
| 43. Explain how antibiotic resistant bacteria have developed       | <p>A mutation leads to a bacterium becoming resistant to antibiotics</p> <p>When antibiotics were given, bacteria without mutation are killed off</p> <p>Bacteria with mutations now have more space, more nutrients to survive and reproduce.</p> <p>Therefore, more antibiotic resistant bacteria in the next generation</p>  |
| 44. How can we reduce the number of antibiotic resistant bacteria? | <ul style="list-style-type: none"> <li>• Not prescribing antibiotics for viruses because antibiotics do not kill viruses (viruses replicate inside cells, and antibiotics cannot access cells)</li> <li>• Not prescribing antibiotics for mild infections that will get better with just the body's immune system</li> <li>• Make sure patient finishes their course, and therefore bacteria are not left over that could possibly mutate</li> <li>• Reducing use of antibiotics in agriculture e.g. battery farming of chickens</li> </ul> |
| 45. Describe the process of selective breeding                     | <ul style="list-style-type: none"> <li>• Humans choose members of species with desired characteristics</li> <li>• Only these organisms are bred</li> <li>• Offspring with best features are then bred</li> <li>• Repeated over several generations</li> </ul>   |



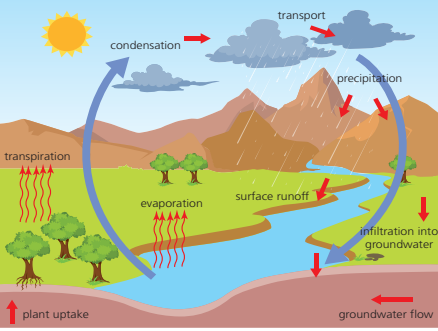
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| 46. Give 3 characteristics that humans have selectively bred for   | <ul style="list-style-type: none"> <li>• Disease resistance in food crops</li> <li>• Animals which produce more meat or milk</li> <li>• Domestic dogs with a gentle nature</li> <li>• Large or unusual flowers</li> </ul>  |
| 47. State 2 disadvantages of selective breeding  | <ul style="list-style-type: none"> <li>• More prone to disease and inherited defects</li> <li>• Reduction in gene pool</li> </ul>  |
| 48. What is genetic engineering?   | Modifying the genome of an organism by inserting a gene from another organism  |
| 49. Give examples of genetic engineering   | <ul style="list-style-type: none"> <li>• Herbicide resistance in plants</li> <li>• Plants resistant to disease</li> <li>• Plants resistant in insect/pest attack</li> <li>• Plants to produce bigger fruits</li> <li>• Bacterial cells to produce human insulin</li> <li>• Sheep produce different proteins in their milk</li> </ul>   |
| 50. What are the advantages of genetic engineering?  | <ul style="list-style-type: none"> <li>• Crop yield is higher, so more profits for farmers and more food for an increasing population</li> <li>• More vitamin content inside food, so better health</li> <li>• Plants resistant to herbicide, so more space and less competition for crops, so bigger yield</li> <li>• Mass production of human proteins needed to treat diseases</li> </ul> |
| 51. What are the disadvantages of genetic engineering?   | <ul style="list-style-type: none"> <li>• Affects not fully explored so could be harmful</li> <li>• Cross pollination with wild plants, so making these herbicide resistant</li> <li>• Less plant biodiversity, so reduction in herbivores, and other species further up the food chain</li> </ul>  |
| 52. Name the 7 classification groups in the system designed by Carl Linnaeus   | <ul style="list-style-type: none"> <li>• Kingdom</li> <li>• Phylum</li> <li>• Class</li> <li>• Order</li> <li>• Family</li> <li>• Genus</li> <li>• Species</li> </ul>    |
| 53. What are the 5 kingdoms?   | Animals, Plants, Fungi, Protists and prokaryotes   |
| 54. What is the binomial system for naming species?  | Species named using their genus and species name<br>It is written in italics, with the genus name starting with a capital letter e.g. <i>Homo sapiens</i> or <i>Panthera leo</i>   |
| 55. How can the species names be used to identify two organisms that are very close in their evolutionary relationship | They will have the same genus  |

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| 56. How are organisms classified?                           | Based on... <ul style="list-style-type: none"> <li>• DNA</li> <li>• Physical features</li> <li>• Amino acid sequences</li> </ul>                                |
| 57. Why is important to classify organisms?                 | Makes communication easier across different countries<br>Makes sense of enormous diversity on Earth<br>Find evolutionary relationship between different species |
| 58. Who came up with the 3 Domain system of classification? | Carl Woese  |
| 59. What led to changes in the classification system?       | More knowledge of cell structure due to developments in microscopes<br>More knowledge of cell processes   |
| 60. Describe the 3 Domain system                            | Archaea – primitive bacteria (extremophiles)<br>Bacteria – true bacteria<br>Eukaryotes – contain a nucleus (animals, plants, protists, fungi)                   |

# Ecology

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| 1. Define the term habitat  | Environment where an organism lives  |
| 2. Define the term population   | Total number of organisms of one species living in a habitat   |
| 3. Define the term community  | Populations of the all the different species in a habitat  |
| 4. Define the term abiotic factors  | Non-living factors in an environment e.g. light intensity, temperature, moisture levels, oxygen level, pH levels, angle of slope, wind intensity   |
| 5. Define the term biotic factors   | Living factors in an environment e.g. new predators, pathogens, availability of food   |
| 6. Define the term ecosystem  | Interaction of the biotic and abiotic factors in the environment.<br>Habitat + community = ecosystem   |
| 7. Define the term competition  | Where members of the same species (intraspecific competition) or members of different species (interspecific competition) fight for the same resources   |
| 8. What do animals compete for?   | Food, shelter and mates  |
| 9. What do plants compete for?  | Water, light intensity, carbon dioxide, space and minerals   |
| 10. Define the term interdependence   | How different species rely on each other for food, shelter, pollination etc. If one species is removed, it affects the whole community   |
| 11. Describe the 3 different types of adaptations                                 | <b>Structural</b> – physical adaptations that you can see, such as white fur, small ears<br><b>Behavioural</b> – what an organism does to survive e.g. penguins huddling<br><b>Functional</b> – relating to an organisms body e.g. hibernating or producing venom  |
| 12. Describe and explain adaptations of an animal living in an arctic environment | <ul style="list-style-type: none"> <li>• Thick layer of fur to act as an insulation</li> <li>• Thick layer of insulating fat to keep warm, and store of food</li> <li>• White fur for camouflage to hide from prey/predators</li> <li>• Small ears to reduce surface area to volume ratio and reduce heat loss</li> <li>• Body shape has a small surface area to volume ration to reduce heat loss</li> <li>• Large paws to reduce pressure, and therefore easier to move/run across snow and ice</li> </ul> |

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| <p>13. Describe and explain adaptations of an animal living in a desert environment</p> | <ul style="list-style-type: none"> <li>• Brown fur for camouflage to hide from prey/predators</li> <li>• Store of water to cope with periods where drinking water is not available</li> <li>• Produce small amounts of concentrated urine</li> <li>• Store of food to cope with periods where food is scarce</li> <li>• Large ears to increase surface area to volume ratio and increase heat loss</li> <li>• Body shape has a large surface area to volume ratio to increase heat loss</li> <li>• Large paws to reduce pressure, and therefore easier to move/run across sand</li> </ul> |
| <p>14. Give an example of an extreme environment</p>                                    | <p>Deep sea hydrothermal vents</p>  |
| <p>15. Describe and explain adaptations of a plant living in a desert environment</p>   | <ul style="list-style-type: none"> <li>• Spike leaves to prevent animals taking their store of water</li> <li>• Leaves also has small surface area to volume ratio to reduce water loss</li> <li>• Have a store of a water to cope with periods where water is not available</li> <li>• Shallow roots extend over a large area to absorb as much water as possible</li> <li>• Deep roots that can access deep groundwater that may available</li> </ul>   |
| <p>16. Define the term producer</p>   | <p>Species such as plants, phytoplankton and algae use the Sun's light energy to produce glucose (chemical energy)</p>  |
| <p>17. Define the term consumer</p>   | <p>Animal that eats to obtain glucose</p>   |
| <p>18. What do the arrows represent in a food chain?</p>                                | <p>Energy transfer</p>  |
| <p>19. State 2 processes that remove carbon dioxide from the air</p>                    | <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Carbon dioxide dissolved in oceans</li> </ul>  |
| <p>20. State 2 processes that release carbon dioxide into the air</p>                   | <ul style="list-style-type: none"> <li>• Respiration (this includes decomposition of dead material)</li> <li>• Combustion</li> </ul>  |

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| <p>21.State and describe 5 processes in the water cycle</p>  | <p><b>Precipitation</b> e.g. rain, snow<br/> <b>Surface run off</b> – water runs down rivers and eventually into seas<br/> <b>Evaporation</b> – water evaporates from rivers, seas and oceans<br/> <b>Transpiration</b> – evaporation of water from the leaves of plants<br/> <b>Condensation</b> – water from evaporation and transpiration condenses to form clouds</p>     |
| <p>22.What is biodiversity?</p>   | <p>Variety of different species within a habitat</p>  |
| <p>23.Why is biodiversity important?</p>  | <ul style="list-style-type: none"> <li>• Development of food and medicines from species</li> <li>• An ecosystem is more likely to cope with change in environment if there is huge biodiversity - reducing the dependence of one species on another for food, shelter and the maintenance of the physical environment</li> <li>• Organisms have a right to survive</li> </ul> |
| <p>24.How has human population impacted the environment?</p>  | <ul style="list-style-type: none"> <li>• Increased waste production</li> <li>• Increased use of limited resources</li> <li>• Increased demand on the environment</li> </ul>   |
| <p>25.Describe 2 human activities that increased the amount of carbon dioxide in the air</p>  | <ul style="list-style-type: none"> <li>• Deforestation – reduced photosynthesis</li> <li>• Increased combustion of fossil fuels</li> </ul>  |
| <p>26.Describe 2 human activities that increased the amount of methane in the air</p>   | <ul style="list-style-type: none"> <li>• Increased decomposition of waste in a landfill</li> <li>• Agriculture – more animals and rice fields</li> </ul>  |
| <p>27.How does Climate Change affect biodiversity?</p>  | <ul style="list-style-type: none"> <li>• Extreme weather patterns/change in environment means that if a species cannot adapt, they may go extinct</li> <li>• Species may have to migrate to different regions, or migrate at different times</li> <li>• Flooding due melting ice caps/sea levels rising, or destruction of habitats, leading to lower biodiversity</li> </ul> |
| <p>28.Describe the negative impacts of deforestation</p>  | <ul style="list-style-type: none"> <li>• Less carbon dioxide taken in by plants for photosynthesis, and thus increasing carbon dioxide in the air</li> <li>• Loss of habitats, reducing biodiversity</li> <li>• Less transpiration, less rainfall, and therefore droughts</li> </ul>  |

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| 29.How are peat bogs formed?                             | <ul style="list-style-type: none"> <li>• When organic material does not decompose due to lack of oxygen or extremes of pH</li> </ul>  |
| 30.Why are peat bogs destroyed?                          | <ul style="list-style-type: none"> <li>• Clear land for fuel</li> <li>• Use the organic material for fuel or compost</li> </ul>   |
| 31.Describe the negative impacts of removing peat bogs   | <ul style="list-style-type: none"> <li>• Destruction of habitats, reducing biodiversity</li> <li>• Using as a fuel releases carbon dioxide into the air</li> </ul>  |
| 32.Give 4 ways by which humans can maintain biodiversity | <ul style="list-style-type: none"> <li>• Reduce deforestation</li> <li>• Reintroduce hedgerows and other habitats, increasing the number of habitats, will increase biodiversity</li> <li>• Reduce amount of waste – uses less land</li> <li>• Breeding programmes to prevent extinction</li> </ul> |
| 33.Give 3 problems of maintaining biodiversity           | <ul style="list-style-type: none"> <li>• All programmes listed in Q32 cost money</li> <li>• Loss of jobs</li> <li>• Land cannot be used for growing crops for food for an increasing human population</li> </ul>  |