Combined Biology

Cheeky 1 Markers

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| Paper 1 | |
| 1. Give features that eukaryotic cells have in common | A cell membrane, cytoplasm and genetic material enclosed in a nucleus |
| 1. Describe how prokaryotic cells differ from eukaryotic cells | They are much smaller in size, their cell membrane is surrounded by a cell wall and their genetic material is in a single DNA loop |
| 1. Give the function of a mitochondria | The site of respiration |
| 1. Give the function of ribosomes | Protein synthesis |
| 1. Give the function of chloroplasts | Contain chlorophyll which absorbs light for photosynthesis |
| 1. Give the function of the nucleus | Contains the genetic material |
| 1. Describe why cell differentiation is important | Cells differentiate for, different functions. As the cell differentiates it acquires different structures so that it can carry out its function |
| 1. Describe the stages of mitosis | The cell grows and increases the number of mitochondria and ribosomes  The DNA replicates to form 2 copies of each chromosome  One set of chromosomes is pulled to each end of the cell and the nucleus divides  The cytoplasm and cell membranes divide to form 2 identical cells  This occurs for growth and development. |
| 1. Define the term “stem cell” | A stem cell is an undifferentiated cell of an organism which is capable of giving rise to many more cells of the same type, and which certain other cells can arise from diferentiation |
| 1. Give some sources of stem cells | Embryo’s, bone marrow and meristem tissue in plants |
| 1. Define the term “diffusion” | Diffusion is the spreading out of the particles of any substance in  solution, or particles of a gas, resulting in a net movement from an  area of higher concentration to an area of lower concentration. |
| 1. Give factors that can affect the rate of diffusion | Temperature, the difference in concentration (concentration gradient), the surface area of the membrane |
| 1. Define the term “osmosis” | Osmosis is the diffusion of water from a dilute solution to a concentrated  solution through a partially permeable membrane. |
| 1. Define the term “Active transport” | Active transport moves substances from a more dilute solution to a  more concentrated solution (against a concentration gradient). This  requires energy from respiration. |
| 1. Name the organs involved in digestion | Mouth, oesophagus, stomach, pancreas, small intestine, large intestine, liver, gall bladder |
| 1. Describe how the enzymes amylase, protease and lipase digest foods | Amylase breaks down starch into glucose, protease breaks down protein into amino acids and lipase breaks down fats into fatty acids and glycerol.  These products are small enough to pass into cells. |
| 1. Name the organ which produces bile | The liver |
| 1. Describe the difference between a communicable disease and a non-communicable disease | Communicable diseases can be passed from person to person by pathogens. Non-communicable diseases are effected by lifestyle and certain risk factors can increase the likelihood of non-communicable diseases |
| 1. Name the plant tissue responsible for transporting water and minerals | Xylem |
| 1. Name the plant tissue responsible for transporting dissolved sugars | Phloem |
| 1. Name some examples of pathogens | Viruses, bacteria, protists and fungi |
| 1. Describe how bacteria make you feel ill | They reproduce rapidly, produce poisons (toxins) that damage tissues |
| 1. Describe how viruses make you feel ill | They reproduce rapidly inside cells causing cell damage |
| 1. Give some examples of viral diseases | Measles, HIV and tobacco mosaic virus |
| 1. Give some examples of bacterial diseases | Salmonella and gonorrhoea |
| 1. Give an example of a fungal disease that affects plants | Rose black spot |
| 1. Give an example of a protist disease that affects humans | Malaria |
| 1. Describe how white blood cells defend us from pathogens | They produce antibodies and antitoxins as well as engulfing pathogens and breaking them down (phagocytosis) |
| 1. What does a doctor inject into a person during a vaccination | An inactive pathogen |
| 1. Suggest a reason why antibiotics cannot be given for a viral infection | Viruses live inside cells so antibiotics are not effective against viruses. |
| 1. Outline how vaccinations work | Dead or weakened pathogen introduced, white blood cells (lymphocytes) produce antibodies, antibodies are produced quickly on re-infection |
| 1. Suggest why some people take pain killers when ill | To reduce the symptoms of the illness |
| 1. Define the term placebo | A “fake” drug which is used to compare the effectiveness of new drugs in drug trialling |
| 1. Give the equation for photosynthesis |  |
| 1. Explain why photosynthesis is an “endothermic” reaction | Energy is taken in from the sun for the reaction to take place. |
| 1. Give the factors which can affect the rate of photosynthesis | CO2 concentration, light intensity, temperature, colour of light, amount of chlorophyll |
| 1. Describe the ways in which plants use the glucose from photosynthesis | Convert to starch for storage, produce fats/oils for storage, produce cellulose to strengthen cell walls, produce amino acids for photosynthesis |
| 1. Give the equation for aerobic respiration |  |
| 1. Give the equation for anaerobic respiration in humans |  |
| 1. Give the equation for anaerobic respiration in plant and yeast cells (fermentation) |  |
| 1. Describe how we can use fermentation in baking and the drinks industry | Produces carbon dioxide which causes bread to rise, produces alcohol which is used to make alcoholic beverages |
| 1. Describe and explain the effects of exercise on the body | During exercise the human body reacts to the increased demand for energy.  The heart rate, breathing rate and breath volume increase during exercise to supply the muscles with more oxygenated blood and to remove carbon dioxide from the cells respiring |
| 1. Define the term metabolism | Metabolism is the sum of all the reactions in a cell or the body. |
| Paper 2 | |
| 1. Define the term homeostasis | The regulation of the internal conditions of a cell or organisms to maintain optimum conditions for function in response to internal and external changes |
| 1. Give the pathway of a nervous reflex response | Receptors detect the stimulus, the sensory neurones send a message by electrical impulses to the central nervous system which sends a message by the motor neurone to the effector (gland or muscle |
| 1. Describe how impulses travel across a synapse | Once the impulse reaches the end of a neuron, neurotransmitter is released into the synapse (gap) which diffuses across the gap to trigger an impulse at the next neurone |
| 1. Name the hormone released when blood sugar is too low | Glucagon |
| 1. Name the hormone released when blood sugar is too high | Insulin |
| 1. Name the hormones involved in the menstural cycle and give their functions | LH – Stimulates the release of an egg  FSH – causes eggs to mature in the ovary  Oestrgen and progesterone – maintain the uterus lining |
| 1. Describe the process of asexual reproduction | Reproduction involving only one organism and no fusion of gametes, there is no mixing of genetic information which leads to genetically identical offspring |
| 1. What is DNA | DNA stands for Deoxyribonucleic acid, this forms a polymer of 2 strands which coils into a double helix. |
| 1. What is a gene | A gene is a section of DNA which codes for a particular sequence of amino acids. |
| 1. Describe the difference between a dominant allele and a recessive allele | A dominant allele is always expressed, and a recessive allele is only expressed if 2 copies of the allele are present in the genotype. |
| 1. Complete a genetic cross diagram (punnet square) to show sex inheritance.   Include the genotypes of the parents and the percentage genotype and phenotype of the offspring | Parents phenotypes Female and Male  Parents Genotypes XX and XY   |  |  |  | | --- | --- | --- | |  | X | X | | X | XX | XX | | Y | XY | XY |   Offspring Genotypes XX and XY  Off spring phenotypes 50% female and 50% male |
| 1. Describe how new characteristics occur in organisms | Genetic mutations |
| 1. Name the scientist who proposed the theory of Evolution by means of Natural selection | Charles Darwin |
| 1. Describe what selective breeding is. | Selective breeding (artificial selection) is the process by which  humans breed plants and animals for particular genetic  characteristics. Humans have been doing this for thousands of  years since they first bred food crops from wild plants and  domesticated animals. |
| 1. Describe how selective breeding is carried out | Selective breeding involves choosing parents with the desired  characteristic from a mixed population. They are bred together.  From the offspring those with the desired characteristic are bred  together. This continues over many generations until all the  offspring show the desired characteristic |
| 1. Describe how genetic engineering is carried out | The gene for the desired characteristic is cut from the DNA using enzyme scissors and then inserted into the DNA of another organism at the early stages of development |
| 1. Name the main source of evidence for evolution | Fossils |
| 1. Describe where there may be gaps in the fossil records | Many early life form were soft bodies – few traces left behind  Geological activity may have destroyed fossils |
| 1. Describe some factors which may lead to extinction | New diseases  Changes to weather patterns/ climate  Introduction of new predators |
| 1. Explain how antibiotic resistant bacteria have evolved | Mutation produces new strain, use of antibiotics would kill all non-resistant bacteria leaving the resistant ones behind, these would survive and reproduce producing more resistant bacteria |
| 1. Outline Carl Linnaeus’ system of classification | Kingdome, phylum, class, order, family, genus, species. |
| 1. Give the 2 factors which form an organisms binomial name | Genus and species |
| 1. Give the three Domain’s developed by Carl Woese | Archaea  Bacteria  Eukaryota |
| 1. Suggest some abiotic factors which would affect and ecosystem | Light space, water, mineral ions, territory, temperature, soil Ph, WIND INTENSITY AND DIRECTION |
| 1. Suggest some biotic factors which would affect and ecosystem | New predators, ability to find a mate, availability of food, new pathogens, one species outcompeting another so the numbers are no longer  sufficient to breed. |
| 1. Define the term “stable community” | One where all the species  and environmental factors are in balance so that population sizes  remain fairly constant. |
| 1. Define the term “adaptation” | Organisms have features (adaptations) that enable them to survive  in the conditions in which they normally live. These adaptations may  be structural, behavioural or functional. |
| 1. Define the term “producer” | All food chains begin with a producer which synthesises molecules. This is usually a green plant or alga which  makes glucose by photosynthesis. |
| 1. Describe some of the processes involved in the carbon cycle | Photosynthesis takes in CO2 from the atmosphere, this carbon is returned to the atmosphere by decay, respiration, combustion and is transferred along food chains by feeding relationships. |
| 1. Outline the water cycle | The water cycle provides fresh water for plants and animals on land  before draining into the seas. Water is continuously evaporated and  precipitated. |
| 1. Give the 3 types of pollution | Pollution can occur:  • in water, from sewage, fertiliser or toxic chemicals  • in air, from smoke and acidic gases  • on land, from landfill and from toxic chemicals. |
| 1. Give 2 reasons why large scale deforestation has occurred. | Large-scale deforestation in tropical areas has occurred to:  • provide land for cattle and rice fields  • grow crops for biofuels |
| 1. List ways which humans are trying to reduce the negative effects humans have had on biodiversity and ecosystems | • breeding programmes for endangered species  • protection and regeneration of rare habitats  • reintroduction of field margins and hedgerows in agricultural  areas where farmers grow only one type of crop  • reduction of deforestation and carbon dioxide emissions by  some governments  • recycling resources rather than dumping waste in landfill. |