T2 revision lists
Biology Edexcel Topic 1 key concepts specification points 1.1 - 1.12

1. Explain how the sub-cellular structures of eukaryotic and prokaryotic cells are related to their functions, including: a animal cells – nucleus, cell membrane, mitochondria and ribosomes b plant cells – nucleus, cell membrane, cell wall, chloroplasts, mitochondria, vacuole and ribosomes c bacteria – chromosomal DNA, plasmid DNA, cell membrane, ribosomes and flagella
2. Describe how specialised cells are adapted to their function, including: a sperm cells – acrosome, haploid nucleus, mitochondria and tail b egg cells – nutrients in the cytoplasm, haploid nucleus and changes in the cell membrane after fertilisation c ciliated epithelial cells
3. Explain how changes in microscope technology, including electron microscopy, have enabled us to see cell structures and organelles with more clarity and detail than in the past and increased our understanding of the role of sub-cellular structures
4. Demonstrate an understanding of number, size and scale, including the use of estimations and explain when they should be used
5. Demonstrate an understanding of the relationship between quantitative units in relation to cells, including: a milli (10^{-3}) b micro (10^{-6}) c nano (10^{-9}) d pico (10^{-12}) e calculations with numbers written in standard form
6. Core Practical: Investigate biological specimens using microscopes, including magnification calculations and labelled scientific drawings from observations
7. Explain the mechanism of enzyme action including the active site and enzyme specificity
8. Explain how enzymes can be denatured due to changes in the shape of the active site
9. Explain the effects of temperature, substrate concentration and pH on enzyme activity
10. Core Practical: Investigate the effect of pH on enzyme activity
11. Demonstrate an understanding of rate calculations for enzyme activity
12. Explain the importance of enzymes as biological catalysts in the synthesis of carbohydrates, proteins and lipids and their breakdown into sugars, amino acids and fatty acids and glycerol

Chemistry Edexcel Topic 2 States of matter (2.1-2.12); Topic 1 key concepts (1.1- 1.12)

Topic 1
1. Describe how the Dalton model of an atom has changed over time because of the discovery of subatomic particles
2. Describe the structure of an atom as a nucleus containing protons and neutrons, surrounded by electrons in shells
3. Recall the relative charge and relative mass of: a a proton b a neutron c an electron
4. Explain why atoms contain equal numbers of protons and electrons
5. Describe the nucleus of an atom as very small compared to the overall size of the atom 1.6 Recall that most of the mass of an atom is concentrated in the nucleus
6. Recall the meaning of the term mass number of an atom
7. Describe atoms of a given element as having the same number of protons in the nucleus and that this number is unique to that element
8. Describe isotopes as different atoms of the same element containing the same number of protons but different numbers of neutrons in their nuclei
9. Calculate the numbers of protons, neutrons and electrons in atoms given the atomic number and mass number
10. Explain how the existence of isotopes results in relative atomic masses of some elements not being whole numbers
11. Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes

Topic 2

1. Describe the arrangement, movement and the relative energy of particles in each of the three states of matter: solid, liquid and gas
2. Recall the names used for the interconversions between the three states of matter, recognising that these are physical changes: contrasted with chemical reactions that result in chemical changes
3. Explain the changes in arrangement, movement and energy of particles during these interconversions
4. Predict the physical state of a substance under specified conditions, given suitable data.
5. Explain the difference between the use of 'pure' in chemistry compared with its everyday use and the differences in chemistry between a pure substance and a mixture
6. Interpret melting point data to distinguish between pure substances which have a sharp melting point and mixtures which melt over a range of temperatures
7. Explain the types of mixtures that can be separated by using the following experimental techniques: a simple distillation b fractional distillation c filtration d crystallisation e paper chromatography
8. Describe an appropriate experimental technique to separate a mixture, knowing the properties of the components of the mixture
9. Describe paper chromatography as the separation of mixtures of soluble substances by running a solvent (mobile phase) through the mixture on the paper (the paper contains the stationary phase), which causes the substances to move at different rates over the paper
10. Interpret a paper chromatogram: a to distinguish between pure and impure substances b to identify substances by comparison with known substances c to identify substances by calculation and use of Rf values
11. Core Practical: Investigate the composition of inks using simple distillation and paper chromatography
12. Describe how: a waste and ground water can be made potable, including the need for sedimentation, filtration and chlorination b sea water can be made potable by using distillation c water used in analysis must not contain any dissolved salts

Physics

1. Recall of energy stores and be able to describe the transfer between energy stores in common everyday devices
2. Interpretation of Sankey diagrams and calculations involving efficiency
3. Explain ways of reducing unwanted energy transfer by conduction, convection and radiation
4. Thermal insulation practical - investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material
5. Measuring the specific heat capacity of water and calculations involving:- $\Delta E = m\, c\, \Delta \theta$
6. Explain what is meant by conservation of energy
7. Recall and use the equation to calculate the amounts of energy associated with a moving object.
8. Recall and use the equation to calculate the change in gravitational PE when an object is raised above the ground.