elevate education

Chemistry

Practice Questions

GCSE
AQA

Instructions

Individual, exam-style questions

The questions contained in this booklet match the style of questions that are typically asked in exams. This booklet is not however, a practice exam. Elevate's research with top students identified that top students do more practice questions than anyone else. They begin the process of testing their knowledge early in the year.

Therefore, we have provided exam-format questions that are sorted by topic so that you can answer them as you learn the information, rather than waiting until the very end of the year to complete exams.

Comments, questions?

Let us know if you need any further advice by visiting www.elevateeducation.com. You can comment on any of our material, or head to the FAQ section and ask us a question. Also, you can find us on social media so you can stay up to date on any brand new tips we release throughout the year.

Other information

Every effort has been made to ensure the accuracy of the information expressed in this booklet, but no warranty or fitness is implied. If you'd like to provide any feedback on this booklet, let us know at admin@elevateeducation.com.

Units 1-3

1. All atoms consist of protons, neutrons and electrons.
    a. State the charge of each of these particles and list the two particles that reside in the nucleus of an atom.
    b. An atom of Molybdenum (Mo) has an atomic number of 42 and mass number of 96. How many neutrons are there in Mo? How many electrons are there?
    c. Argon (Ar) has an atomic number of 18. Draw a diagram showing the electron shell structure of Ar. Why is Ar an unreactive element?

2. Ethane, methane, octane and ethene are all examples of hydrocarbons. Hydrocarbons are a common source of energy.
    a. What is a hydrocarbon? What is the difference between alkanes and alkenes?
    b. What is meant by the term fractional distillation? Explain how this process is used to separate different hydrocarbons?
    c. The general chemical formula for alkanes is given by CnH2n+2, e.g. C3H8 is the formula for propane. As n increases how would you expect the viscosity of alkanes to change?

3. Chemical bonds that hold atoms together in solids, liquids and gases can either be ionic or covalent.
    a. Explain the difference between ionic and covalent bonds.
    b. Give one example of a substance in which the bonding is ionic and one in which the bonding is covalent.
    c. In general, would you expect an ionic compound to have a higher or lower boiling point than a covalent one? Why is this?

4. Electrolysis is the process by which aluminium is extracted from aluminium oxide.
    a. With the aid of a diagram, explain how this process of electrolysis works. Your answer should include an explanation of why cryolite is used.
    b. In this process, Aluminium forms at the cathode. What biproduct is formed at the anode? What gas is produced in this process?

c. Write down the chemical equation describing how negative ions form into neutral molecules at the anode.

5. Chemical reactions can be categorised into exothermic reactions and endothermic reactions.
   a. Explain what is meant by the activation energy of a reaction.
   b. Using the concept of activation energy, explain the difference between exothermic reactions and endothermic reactions.
   c. What is a catalyst? What effect does a catalyst have on the activation energy of a reaction? In the production of ammonia a catalyst is used to increase the yield of the production process. What catalyst is used?