

CfE Science Exam Revision Questions

Model of Matter

1. Copy and complete the table below.

✓ = present × = absent

	Fixed Shape	Fixed Volume
Solid		
Liquid		
Gas		

- When you add 10ml of water to 10ml of alcohol, why does the total volume not equal 20ml?
- Name a use of carbon dioxide?
- What is the name given to the process by which a solid becomes a liquid?
- Draw a particle model of a gas
- What happens to particles when they are heated?
- At what temperature does water freeze?
- When a solid changes into a liquid are bonds broken or formed? Also, is energy produced or used up?
- What name is given to the process by which a gas becomes a liquid?
- Name a use for Argon.
- Which is easiest to compress:- a solid, liquid or gas?
- What is the name given to the process by which a material gets smaller when cooled?
- What percentage of the air is made up of oxygen?
- What is the name given to the process by which particles spread to fill spaces?
- Draw a particle model of a solid.
- At what temperature does water boil?
- Describe the main stages of the water cycle.
- What is the name given to the process by which a liquid becomes a gas?

19. What percentage of the atmosphere is nitrogen?
20. Draw a particle model of a liquid.

Light & Other Radiations

1. What term is used to describe the colours red, green and blue?
2. Give an example of a use of infrared radiation by humans.
3. If light is reflected onto a mirror at a 45° angle what angle will it bounce off at?
4. If a welder wanted to check for cracks in his metal work what type of radiation would he be best to use?
5. Name the type of material which absorbs all light, preventing any passing through?
6. Copy and complete this sentence, choosing the correct words:
Electromagnetic radiation is a range of types of radiations which have different wavelengths/speeds but the same wavelength/speed.
7. In what way does light travel?
8. If red and green are mixed in equal intensities, what colour would you produce?
9. What is the name given to the imaginary line drawn at an angle of 90° to a surface where the light hits it?
10. Which type of lens causes light to converge?
11. What name is given to the angle at which light hits a surface before it is reflected away?
12. Light changes direction as it travels through a prism. What is this called?
13. Which of the following can light travel through :- solid, liquids, gases or vacuums?
14. If a material is transparent what does this mean?
15. Why is it unwise to become over exposed to certain types of radiation, UV, X-rays and gamma rays in particular?
16. List the colours of the **visible** spectrum in the correct order.
17. Which type of radiation is found naturally in sunlight?
18. What colours should you mix to obtain cyan?

19. Name the special type of paper used to show heat.
20. Draw a concave lens and show how light would pass through it.

Cells

1. What does a microscope do?
2. Why are stains often used with microscope slides.
3. Draw and label a plant and an animal cell.
4. Which three structures are shared by both the animal and plant cell.
5. Give the function of the following.
 - Nucleus
 - Cell wall
 - Cytoplasm
 - Chloroplast
6. Put the following in the correct order, starting with the smallest:
Tissues, Organs, Cells, Organism
7. Why do red blood cells have a biconcave shape?
8. What allows sperm to swim and fertilise an egg?
9. Why do palisade mesophyll cells have chloroplasts?
10. Why are epidermal cells suited for their role of protection?
11. Name the three types of microbes.
12. Name the three substances produced by the body to try to prevent infection.
13. Name the non-specific white blood cells produced to destroy microbes in the blood.
14. Name the special chemicals produced by lymphocytes.
15. Give a useful substance which can be made by bacteria.
16. What must viruses have if they want to invade an organism?
17. How are bacterial infections treated?
18. What is the spread of unwanted microbes called?
19. How should agar plates be treated before disposal?
20. Name three conditions needed for maximum growth of microbes in a fermenter.

Periodic Table & Chemical Reactions

1. What is an element?
2. What is the name given to the table all the elements are displayed in?
3. Give the symbol for the following:
 - Oxygen
 - Sodium
 - Nitrogen
 - Magnesium
 - Potassium
4. What elements are represented by the following symbols?
 - Au
 - Li
 - S
 - C
5. The periodic table can be split into two main groups. Name them.
6. List three properties of metals.
7. List three properties of non-metals.
8. What is an atom?
9. Name the three particles contained in an atom.
10. What is the name given to the centre of an atom?
11. What does the atomic number of an atom tell you?
12. Write the equation to explain how the mass number of an element is worked out.
13. How are elements arranged in the periodic table?
14. How are the elements arranged into groups?
15. What does being in the same group mean for the elements in that group?
16. What are group one elements known as?
17. How many outer electrons do group one elements have?
18. Give a property of group one elements.
19. What group do the Noble gases belong to?
20. The Noble gases are very un-reactive because of the number of outer electrons they have. How many outer electrons do they have?

21. What is always produced at the end of a chemical reaction?
22. What are the four main signs which indicate that a chemical reaction has taken place?
23. What is the main difference between a chemical and a physical reaction?
24. What is the difference between a compound and a mixture?
25. What does the process of electrolysis involve?
26. Name the four ways in which the rate of a chemical reaction can be increased.

Heat & Renewable Energy

1. Which type of energy is passed through an object by conduction?
2. Copy and Complete;
In conduction heat flows from _____ parts to _____ parts of a material.
3. Explain the term "conductor of heat".
4. Give three examples of insulators of heat.
5. Are metals good or poor conductors of heat?
6. Explain why some metal cooking pots have plastic handles.
7. Explain why some metal cooking pots are made out of copper.
8. Rewrite the correct version of the following sentence.
Most liquids are good/poor conductors of heat.
9. Why does wool feel warm?
10. In what direction does hot air travel?
11. Explain what is meant by a convection current. You may wish to use a diagram in your answer.
12. List three ways in which convection is used by humans.
13. Explain the term heat radiation.
14. Give the name of the invisible radiation given off by hot objects.
15. What object emits heat radiation which is crucial to life on earth?
16. Answer true or false to the following statements:-
 - (i) Heat radiation can travel through a vacuum.
 - (ii) Heat radiation can travel through air.

- (iii) Heat radiation can travel through glass.
17. Which surfaces, white/shiny or black/dull, are more efficient at absorbing and emitting heat radiation?
 18. Give three examples of uses of infrared radiation by humans.
 19. Draw a labelled diagram of a house to show where heat can be lost.
 20. Make a list explaining how heat loss can be prevented in each of the areas named in question 19?
 21. What type of heat loss is prevented by loft insulation and draught excluders?
 22. How can conduction be prevented through walls and windows?
 23. A pupil said, "Close the window, the cold is getting in." Why is this statement not correct?
 24. A vacuum flask can prevent heat loss by conduction, convection and radiation. Explain how it is able to do this.
 25. Draw and label a diagram of a vacuum flask cut open to show a cross section.
 26. Some of our energy comes from nuclear fuel, what makes this type of fuel potentially dangerous?
 27. How many types of fossil fuel are there?
 28. Name the fossil fuels.
 29. Where do fossil fuels come from?
 30. Why are fossil fuels referred to as non-renewable?
 31. List three types of renewable energy.
 32. What are the benefits of renewable energy?
 33. During the solar cell investigation which energy conversion took place? _____ energy to _____ energy.

Reproduction & Embryology

1. What happens during fertilisation ?
2. Where does fertilisation take place?
3. Where are sperm cells produced?
4. Where does the fertilised egg embed itself?
5. What is the protective sac of fluid a foetus develops in called?
6. What is the name of the organ that allows the foetus to gain oxygen and dissolved food from its mother's blood stream?
7. Which substances should a woman avoid during pregnancy and why?
8. What is the chemical that chromosomes are made of?
9. How many chromosomes do egg cells contain?
10. How many chromosomes do brain cells contain?
11. If a child has two X chromosomes, are they male or female?

Acids and Alkalis

1. Name two common household acids.
2. Name two common household alkalis.
3. Name a liquid which can be used to indicate the presence of an acid or alkali.
4. What number on the pH chart represents neutral substances?
5. Which colours on the pH chart represent alkalis?
6. What is meant by the term neutralisation when applied to acids and alkalis?
7. What are the products of neutralisation of an acid by an alkali?
8. Name the products produced when hydrochloric acid is neutralised by sodium hydroxide?
9. If you were stung by a wasp what would you apply to your sting?
10. Explain your answer to question 9.
11. When a non-metal oxide dissolves in water, what type of product is formed?
12. Name the products produced when a metal carbonate neutralises an acid.

13. How can the gas given off during this reaction be identified?
14. What type of sting is given by a bee?
15. What ion do all acids contain?
16. When an electrolysis reaction is carried out to split an acid, which electrode do the hydrogen ions gather at?
17. How can a test-tube of gas be identified as hydrogen?
18. Potassium is too reactive to safely add to an acid. What common liquid does it react violently with, producing hydrogen?
19. What happens to the pH of an acid as it is diluted?
20. When an alkali is diluted what happens to the concentration of the alkali?