

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?
- What percentage of the atmosphere is nitrogen?
- 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:
7. Electromagnetic radiation is a range of types of radiations which have different wavelengths/speeds but the same wavelength/speed.
8. In what way does light travel?
9. If red and green are mixed in equal intensities, what colour would you produce?
10. What is the name given to the imaginary line drawn at an angle of 90° to a surface where the light hits it?
11. Which type of lens causes light to converge?
12. What name is given to the angle at which light hits a surface before it is reflected away?
13. Light changes direction as it travels through a prism. What is this called?
14. Which of the following can light travel through :- solid, liquids, gases or vacuums?
15. If a material is transparent what does this mean?
16. Why is it unwise to become over exposed to certain types of radiation, UV, X-rays and gamma rays in particular?
17. List the colours of the **visible** spectrum in the correct order.
18. Which type of radiation is found naturally in sunlight?
19. What colours should you mix to obtain cyan?
20. Name the special type of paper used to show heat.
21. 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 five 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:
7. Tissues, Organs, Cells, Organism
8. Why do red blood cells have a biconcave shape?
9. What allows sperm to swim and fertilise an egg?
10. Why do palisade mesophyll cells have chloroplasts?
11. Why are epidermal cells suited for their role of protection?
12. Name the three types of microbes.
13. Name the three substances produced by the body to try to prevent microbes getting inside and infecting us.
14. Give a useful substance which can be made by bacteria.
15. What must viruses have if they want to invade an organism?
16. How are bacterial infections treated?
17. What is the spread of unwanted microbes called?
18. How should agar plates be treated before disposal?
19. 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	Magnesium
Sodium	Potassium
Nitrogen	
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. Are groups the columns or rows of the periodic table?
13. What does being in the same group mean for the elements in that group?
14. What are group one elements known as?
15. Give a property of group one elements.
16. What group do the Noble gases belong to?
17. What is always produced at the end of a chemical reaction?
18. What are the four main signs which indicate that a chemical reaction has taken place?
19. What is the main difference between a chemical and a physical reaction?
20. What is the difference between a compound and a mixture?
21. What does the process of electrolysis involve?
22. 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;
3. In conduction heat flows from _____ parts to _____ parts of a material.
4. Explain the term "conductor of heat".
5. Give three examples of insulators of heat.
6. Are metals good or poor conductors of heat?
7. Explain why some metal cooking pots have plastic handles.
8. In what direction does hot air travel?
9. Explain what is meant by a convection current. You may wish to use a diagram in your answer.
10. In what way does heat radiation travel?
11. Give the name of the invisible radiation given off by hot objects.
12. What object emits heat radiation which is crucial to life on earth?
13. Answer true or false to the following statements:-
 - a. Heat radiation can travel through a vacuum.
 - b. Heat radiation can travel through air.
 - c. Heat radiation can travel through glass.
14. Which surfaces, white/shiny or black/dull, are more efficient at absorbing and emitting heat radiation?
15. Give two examples of uses of infrared radiation by humans.
16. How do we reduce heat loss through the following parts of houses?
 17. Windows
 18. Walls
 19. Roof
 20. Doors
21. Name the fossil fuels.
22. Why are fossil fuels referred to as non-renewable?
23. List three types of renewable energy.
24. What are the benefits of renewable energy?
25. 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 a zygote implant?
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. When referring to genetics, what does the term phenotype mean?
12. Apart from inherited genes, what other factor can effect an organism's phenotype?
13. What are alleles?
14. Complete the following sentence;
15. Some genes are dominant other genes are _____
16. If a child has two X chromosomes, are they male or female?
17. Which parent's sex cells determine if a child is a male or a female?
18. What name is given to the diagram showing chromosomes arranged in order of height?
19. What occurs during egg development that results in a child with Down's syndrome?
20. What is meant by the term genetic engineering?
21. What term is used to describe foods which come from plants or animals which have genes introduced into them?

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?