Combined Foundation Knowledge quizzes June 2022

Tips:

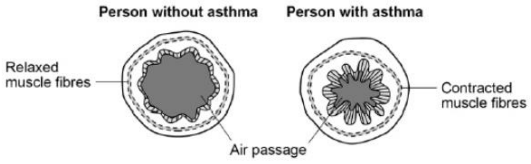
- Learn one quiz at a time. Cover the right hand side and go through each question, checking the answers as you go.
- Get a friend or family member to quiz you – in random order
- When you are feeling confident, cover the right side and write the answers to all the ones you can, then check.

Question	Answer
1. What is the function of the cell membrane?	Control what enters and leaves the cell
2. Where in a cell does respiration take place?	Mitochondria
3. What is the function of the ribosomes?	Making proteins
4. Name 3 structures found in a plant cell but not in an animal cell	Vacuole, chloroplast, cell wall
5. Which part of the microscope does the slide sit on?	Stage
6. Which magnification do you always start with?	Lowest
7. Why is it necessary to start with this magnification?	To give the widest field of view
8. What is the name of the lens you look down?	Eyepiece lens
9. What do you do if the cells are blurry?	Turn the focusing wheel
10. How do you see more detail in the cells once you've found them?	Increase the magnification
11. What is the name of the lens near the stage?	Objective lens
12. How do you calculate total magnification of the microscope?	Eyepiece x objective lens
13. What is the function of the nucleus?	Contains the DNA
14. What are chromosomes made of?	DNA
15. In body cells, the chromosomes are found in…..	Pairs
16. What are the 3 stages of the cell cycle?	Interphase, mitosis, cytokinesis
17. What happens during interphase?	All the DNA is copied and so are all cell organelles like mitochondria, ribosomes etc
18. What happens during mitosis?	The chromosomes move to opposite sides, the nucleus divides
19. What happens during cytokinesis?	The cytoplasm and cell membranes divide
20. Why is mitosis important?	Growth and repair
21. What is a stem cell?	An unspecialized cell capable of becoming any type of cell
22. What is the name of the source of stem cells in plants?	Embryos
23. What type of cells can be obtained from stem cells in bone marrow?	Blood cells
24. Name two diseases that could be treated using stem cells	Paralysis and diabetes
25. What is the main source of stem cells from which all other cells can be made?	Meristem
26. What is a 'cloned' cell?	A cell that is identical to the parent cell
27. What is therapeutic cloning?	When the patients DNA is inserted into an egg cell to create embryonic stem cells that match the patients DNA
28. What is the advantage of being treated with cloned cells?	Less chance of rejection
29. Name one risk associated with cloned cells	Transfer of viral infections
30. Name 2 benefits of cloning plants	Producing crop plants with better yields, protecting plants from extinction
31. What is the main difference between eukaryotic and prokaryotic cells?	Eukaryotic cells contain a nucleus, prokaryotic cells don't
32. Give an example of a prokaryotic cell.	Bacterial cell
33. Muscle cells are specialized cells, what is their function?	To contract
34. Root hair cells are plant cells specialised for water and mineral absorption. What are its adaptations?	Large surface area to provide contact with soil water. Thin walls give a short path for movement of water.
35. At what stage do animal cells differentiate?	Early stages
36. At what stage do plant cells differentiate?	Many types of plant cells retain the ability to differentiate throughout life
37. Which has a greater magnification light or electron microscopes?	Electron microscopes
38. Define resolution.	The ability to see greater detail in an image. The ability to see two points as two points, rather than merged into one

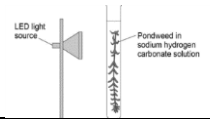
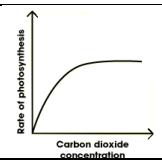
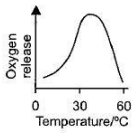
Question	Answer
1. What are the 7 components of food?	Carbohydrates, proteins, fats, water, vitamins, minerals and fibre
2. Which food component provides us with most of our energy?	Carbohydrates
3. What is protein needed for in the diet?	Growth and repair
4. In which organ does digestion begin?	Mouth
5. What is an enzyme?	A protein that acts as a catalyst
6. Why does food need to be digested?	So that small soluble molecules can get across the membrane of the small intestine into the blood
7. Which enzyme is produced in the mouth?	Amylase
8. Which is the only enzyme found in the stomach?	Protease
9. Name two organs that produce and release all 3 digestive enzymes	Pancreas and small intestine
10. When amylase acts on starch, what is produced?	Glucose
11. What is produced when proteins are broken down?	Amino acids
12. Which enzyme digests proteins?	Protease
13. Which enzyme digests fats?	Lipase
14. What are the two products when fats are broken down?	Fatty acids and glycerol
15. Where is bile made?	Liver
16. Where is bile stored?	Gall bladder
17. What are the 2 functions of bile?	Neutralize stomach acid to produce the right conditions for the enzymes in the small intestine Emulsify fats (provide a larger surface area)
18. What is the function of stomach acid?	Kill bacteria in food
19. What chemical is used to test for starch?	Iodine
20. What is the colour change in the chemical named in Q19 if starch is present?	Brown to blue black
21. Which chemical is used to test for protein?	Biuret
22. Describe what you would see in a positive test for protein	Colour change from blue to purple/lilac
23. What colour is Benedicts solution?	Blue
24. What is Benedicts used to test for?	Glucose
25. What is the colour change in Benedicts if the test is positive?	Blue to brick red
26. What are the small molecules produced in digestion used for?	To build new carbohydrates, fats or proteins in the body. Glucose is used in respiration
27. How can the Benedicts test be heated safely?	Using a water bath
28. How can foods be tested for the presence of fat?	Add equal volumes of ethanol and water – if the water goes cloudy, fats are present
29. Name a food that is a good source of carbohydrate	Potatoes, rice, pasta, bread
30. What type of foods are good sources of protein?	Meat, fish, cheese, pulses
31. What is a tissue?	A group of cells with a similar structure and function
32. What are a group of tissues working together to perform a similar function called?	Organs
33. In which type of plant tissue would you find lots of chloroplasts?	Palisade mesophyll
34. What is the function of the xylem in a plant?	Transport water and some soluble nutrients from the root to the leaves and stem
35. What is translocation?	Movement of dissolved glucose around the plant in the phloem
36. What is the function of the stomata?	To allow diffusion of gases in and out of the leaf
37. Name four factors that can affect the rate of transpiration	Wind speed, temperature, light intensity, humidity levels
39. Give 3 factors that affect diffusion.	Concentration gradient, Temperature and Surface area of the membrane

40. The effectiveness of an exchange surface can be increased by what 4 things?	Large surface area Thin membrane- to provide a short diffusion path (in animals) An efficient blood supply (in animals, for gaseous exchange) being ventilated.
41. By what process does water move into and out of cells?	Osmosis
42. If a potato is placed in distilled water, will the net movement of water be into or out of the cell?	Into the cell- water moves from an area of higher water concentration to an area of lower water concentration
43. Name two factors that can affect the working of an enzyme	Temperature and pH
44. Why do enzymes not work when they are denatured?	The shape of the active site is permanently changed so the substrate cannot fit in
45. What is the working part of an enzyme called?	Active site
46. Give two ways active transport differs from diffusion	Active transport requires energy and moves substances against the concentration gradient

Question	Answer
1. What is the name of the top chambers of the heart?	Left and right atrium
2. What are the two bottom chambers called?	Left and right ventricles
3. Which blood vessels carry blood away from the heart?	Arteries
4. Why is the heart known as a 'double pump'?	Because the left side pumps to the body and the right side pumps to the heart
5. What is the name of the artery leaving the left ventricle to take blood to the whole body?	Aorta
6. Why are the valves in the heart?	To keep blood flowing one way and stop backflow
7. Where is the pacemaker located?	Right atrium
8. What is the name of the arteries that supply the heart itself with blood?	Coronary arteries
9. What is the name of the artery leaving the right ventricle to take blood to the lungs?	Pulmonary artery
10. What is the name of the blood vessel that brings blood to the heart from the body?	Vena cava
11. What is the name of the blood vessel that brings blood back from the lungs to the heart?	Pulmonary vein
12. What is the name of the main airway from the mouth to the lungs?	Trachea
13. The two airways that lead into the lungs are called….	Bronchi
14. Where in the lungs does gas exchange take place?	Alveoli
15. What are the 4 components of blood?	Plasma, platelets, red blood cells, white blood cells
16. Which part of the blood carries dissolved substances?	Plasma
17. What is the function of the red blood cells?	Carry oxygen
18. How are the red blood cells adapted for their function?	They have no nucleus and lots of haemoglobin
19. What is the function of the white blood cells?	Detect and destroy pathogens
20. What are the platelets for?	Clotting blood
21. Which blood vessels contain valves?	Veins
22. Which blood vessels have a strong elastic wall and thick layer of muscle to ensure blood is under high pressure?	Arteries
23. Which blood vessels have walls that are only one cell thick?	Capillaries
24. Which blood vessels carry blood under low pressure back to the heart?	Veins
25. How is the blood on the left side of the heart different from the blood on the right?	The blood on the left is higher in oxygen and lower in carbon dioxide

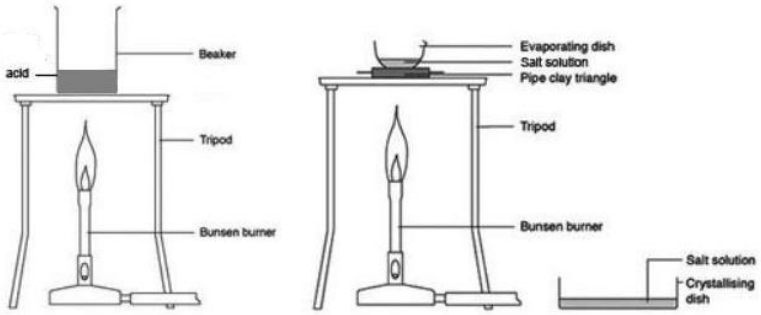
Question	Answer
1. What is health?	The state of physical and mental well-being
2. What is a non-communicable diseases?	A disease NOT caused by a pathogen and therefore cannot be passed from person to person
3. Name 3 lifestyle factors that are linked with cardiovascular disease	Smoking, diet, exercise
4. Which two organs are affected by alcohol?	Liver and brain
5. Name a risk factor for Type 2 diabetes	Obesity
6. What is a carcinogen?	Something capable of causing cancer
7. What is cancer?	Uncontrolled cell division
8. What is a benign tumour? 	One that will not spread around the body
9. Why do benign tumours not spread around the body?	Because they are contained within a membrane
10. What is a malignant tumour? 	One that is capable of spreading around the body
11. How do bits of malignant tumours spread around the body?	In the bloodstream
12. Name some risk factors for cancer	Genetics, diet, smoking, ionizing radiation
13. What happens during an asthma attack?	The airways (bronchi and bronchioles) constrict
14. Which virus is linked with cervical cancer?	HPV
15. Name 2 diseases linked to obesity	Heart disease and type 2 diabetes
16. Which parts of the body are affected by asthma?	Airways (trachea, bronchi, bronchioles)
17. Why do people with asthma often struggle to breathe? Use the diagram below to help explain. 	Less air can flow in and out of the lungs
18. Name two lifestyle factors that can be a risk to unborn babies	Smoking, alcohol
19. Name a risk factor for skin cancer	Ultraviolet radiation (UV) from the sun
20. Name a risk factor for lung cancer	Smoking
21. What are statins?	A drug used to keep the coronary arteries open by reducing cholesterol levels
22. What else can be used to treat cardiovascular disease?	Stents Transplant- heart/valves

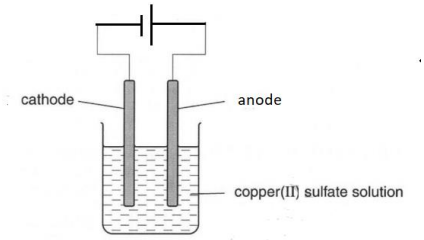
Question	Answer
1. What is a communicable disease?	One that is caused by a pathogen and so can be passed on from person to person
2. What is a pathogen?	Any microbe capable of making us ill
3. What are the 4 types of pathogen?	Bacteria, viruses, protist, fungi
4. Name 4 ways pathogens can be spread	Air, water, direct contact, animal bites
5. In what two ways do pathogens make us feel ill?	Damaging our cells and releasing toxins
6. Where do viruses live and reproduce?	Inside our cells
7. What type of disease is measles?	Virus
8. How is measles spread?	In the air from sneezes and coughs
9. What system does HIV attack?	The immune system
10. How is HIV controlled?	Antiretroviral drugs
11. How is HIV spread?	Unprotected sex or sharing needles
12. Name the plant pathogen that causes a 'mosaic' pattern on leaves	Tobacco mosaic virus
13. Why do plants infected with this virus grow less?	Less photosynthesis in the mosaic parts of leaves
14. What are the symptoms of salmonella infection?	Stomach cramps, fever, diarrhea, vomiting
15. What type of pathogen is salmonella?	Bacteria
16. How is the spread of salmonella spread controlled in the UK?	Vaccinating poultry, cooking chicken well
17. What type of pathogen is gonorrhoea?	Bacteria
18. What are the symptoms of a gonorrhoea infection?	Yellow/green discharge from genitals
19. How can the spread of gonorrhoea be controlled?	Using barrier protection like condoms
20. What causes 'rose black spot'	A fungus
21. How is rose black spot treated?	Fungicides
22. What type of pathogen causes malaria?	Protist
23. What is the vector for malaria?	Mosquitos
24. Name 2 ways of controlling the spread of malaria	Mosquito nets/reducing breeding grounds for mosquitos/insect repellant
25. What is found in the stomach that kills pathogens?	Hydrochloric acid
26. What is present in the trachea and bronchi to prevent the entry of pathogens?	Mucus and tiny hairs called cilia
27. In which 3 ways do white blood cells defend against pathogens?	Phagocytosis (ingesting pathogens and destroying them), releasing antibodies, releasing antitoxins
28. What is in a vaccine?	A dead or weakened form of the pathogen
29. Which pathogens can be killed by antibiotics?	Bacteria
30. Why can antibiotics NOT be used to treat viral infections?	Because viruses live inside our cells
31. From where do we get the following drugs: a) digitalis b) aspirin c) penicillin	Digitalis – foxgloves Aspirin – willow trees Penicillin – penicillium mould
32. What are new drugs tested on first?	Cells and tissues
33. What type of patients are used in stage 1 clinical trials?	Healthy volunteers
34. What is the point of stage 1 clinical trials?	To check for side effects
35. What is a placebo?	A fake treatment with no drug in
36. What is a 'double blind' trial?	One where neither the doctors running the trial or the patients know who gets the placebo and who gets the real treatment

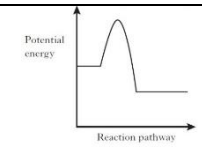
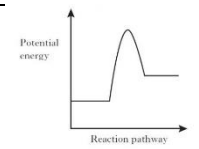
Question	Answer
1. What are the reactants in photosynthesis?	Carbon dioxide and water
2. What are the products in photosynthesis?	Glucose and oxygen
3. Write the equation for photosynthesis	Carbon dioxide + water → glucose + oxygen
4. Why is photosynthesis an endothermic reaction?	Energy is needed (transferred by light)
5. Where in the plant cells does photosynthesis take place?	Chloroplasts
6. Name the factors that affect the rate of photosynthesis	Temperature, light intensity, carbon dioxide concentration, concentration of chlorophyll
7. Which substance found in the chloroplasts is needed for photosynthesis to take place?	Chlorophyll
8. How does the carbon dioxide needed for photosynthesis get into the leaves?	Diffuses through the stomata
9. What is the name of the cells surrounding the stomata?	Guard cells
10. How does the water needed for photosynthesis get from the roots to the leaves?	Through the xylem
11. In which plant tissue does the glucose made get transported around the plant?	Phloem
12. What is the name of the process by which glucose is transported around the plant?	Translocation
13. What is the name of the process by which water evaporates through the stomata, which brings more water up from the roots?	Transpiration
Questions 14 – 20 relate to this investigation which aims to test the hypothesis 'The rate of photosynthesis depends on the light intensity' 	
14. How can the rate of photosynthesis be measured using the equipment shown?	Counting the number of bubbles per minute
15. How could the light intensity be changed?	Move the lamp further away
16. What factors would need to be controlled to ensure a valid conclusion?	Temperature, plant, carbon dioxide conc
17. How could temperature be controlled?	Using a water bath (DON'T just say 'using a thermometer)
18. Why is an LED light used instead of a normal bulb?	LED lamps don't get hot
19. How many distances should be measured?	Minimum of 5
20. Why is the plant in sodium hydrogen carbonate solution instead of just water?	To provide carbon dioxide
21. Describe the relationship shown: 	As the carbon dioxide concentration increases, so does the rate of photosynthesis, but only up to a point, when even if the concentration is increased the rate remains constant
22. Describe the relationship shown: 	As the temperature increases, the rate of photosynthesis increases, but only up to about 40°C. After that, an increase in temperature causes the rate to decrease
23. What is a limiting factor?	A factor that is in the shortest supply and is therefore limiting the rate of photosynthesis.
24. Give 5 ways plants use glucose produced in photosynthesis.	For respiration, converted into insoluble starch for storage, used to produce fat or oil for storage, used to produce cellulose (which strengthens the cell wall), used to produce amino acids for protein synthesis.
25. Write the word equation for aerobic respiration	Oxygen + glucose → carbon dioxide + water
26. Write the equation for anaerobic respiration in plants and yeast	Glucose → ethanol + carbon dioxide
27. When does anaerobic respiration take place in muscles?	When enough oxygen can't be supplied to the muscles quickly enough
28. Why does breathing rate and breathing volume increase during exercise?	To get more oxygen into your blood, and to remove carbon dioxide from the blood more quickly.
29. Why does heart rate increase during exercise?	To pump oxygenated blood to cells more quickly (and remove CO_2 more quickly too)
30. What is meant by the term 'metabolism'?	The sum of all the chemical reactions happening in an organism

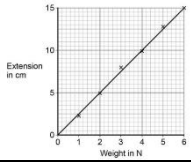
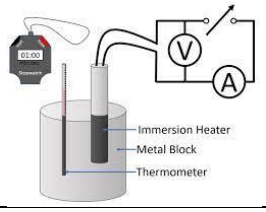
Question	Answer
1. What is used to order the elements in the modern periodic table?	Atomic number / proton number
2. What was used in early versions of the periodic table?	Atomic weight
3. What do all elements in the same group have in common?	Same number of electrons in the outer shell
4. What did Mendeleev do in his periodic table?	Left gaps for undiscovered elements
5. What do we call atoms with the same number of protons but different numbers of neutrons?	Isotopes
6. What do we call the elements that react to form positive ions?	Metals
7. What type of elements form negative ions?	Non-metals
8. Give 3 properties of metals	Conduct electricity, conduct heat, shiny when fresh cut
9. Give 3 properties of non-metals	Don't conduct electricity, low melting and boiling points, dull
10. Why are group 0 elements unreactive?	They have full outer shells so do not need to gain or lose any electrons
11. What happens to their melting and boiling points as you come down the group?	The melting and boiling points increase down the group
12. What are the group 1 metals called?	Alkali metals
13. What happens to reactivity coming down group 1?	Reactivity increases down the group
14. Why does this happen?	The outer shell electron is further away from the nucleus and more shielded, so is more easily lost
15. What are the two products when a group 1 metal reacts with water?	An alkali and hydrogen gas
16. What can be added to the solution to prove an alkali has formed?	Universal indicator
17. What are the group 7 elements called?	Halogens
18. How many electrons are in their outer shells?	7
19. What happens to melting and boiling point coming down group 7?	It increases
20. Why does this happen?	The molecules get bigger, so the intermolecular forces are stronger and so it takes more energy to overcome the forces
21. What happens to reactivity coming down group 7?	Reactivity decreases down the group
22. Why does this happen?	The outer shell is more shielded and further away, so it gets harder to attract an electron into the outer shell
23. When a more reactive halogen is added to a solution of a compound of a less reactive halogen, what happens?	The more reactive halogen displaces the less reactive one
24. What sort of compounds do group 7 elements form with metals?	Ionic
25. Describe 2 properties of these compounds	White crystalline solids, high melting points

Question	Answer
1. What does an (s) in an equation mean?	Solid (insoluble)
2. What state of matter is represented by (l)?	Liquid
3. How would a gas be represented in an equation?	(g)
4. What two changes of state can happen at the melting point?	Melting and freezing
5. What two changes of state can happen at the boiling point?	Boiling and condensing
6. What does (aq) mean?	Aqueous solution – dissolved in water
7. What forces of attraction are found in ionic compounds?	Electrostatic
8. Why are the melting and boiling points of ionic compounds so high?	The electrostatic forces are strong so it takes lots of energy to overcome all of them in the ionic lattice
9. What sort of bonding is found in carbon dioxide and oxygen?	Simple covalent
10. Why are carbon dioxide and oxygen gases at room temperature?	Because their boiling point is lower than room temperature
11. Why do small molecules have low melting and boiling points?	The forces between the molecules are weak and don't need much energy to overcome
12. What happens to melting and boiling points as molecules get bigger and why is this?	They increase
13. Why do simple covalent molecules not conduct electricity?	The molecules have no overall charge
14. What sort of bonding is found in polymers?	Covalent
15. Why are polymers normally solids at room temperature?	Because they are large molecules so the forces of attraction are fairly strong
16. What sort of structures are diamond, graphite and silica examples of?	Giant covalent structures
17. Why do they have high melting and boiling points?	Lots of energy is needed to break all the strong covalent bonds
18. What sort of bonding is found in metals like gold and silver?	Metallic
19. Why do metals conduct electricity?	Because they have delocalized electrons that are able to move through the metal
20. Why are pure metals easily bent and shaped?	The layers of atoms are able to slide over each other easily
21. What is an alloy?	A mixture of metals
22. Why are alloys stronger than pure metals?	Because the layers are disrupted so they cannot slide
23. How many other carbon atoms is each carbon bonded to in diamond?	4
24. How many covalent bonds does each carbon make in graphite?	3
25. Why does graphite conduct electricity?	It has delocalized electrons that can move through the graphite
26. Why is graphite slippery?	Graphite is in layers and they are able to move over each other
27. What is graphene?	A single layer of graphite
28. What type of molecules are based on hexagonal rings of carbon atoms?	Fullerenes
29. What type of structure is shown in the diagram: 	nanotube

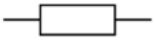
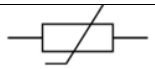
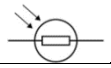
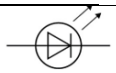
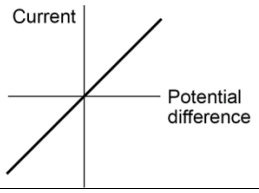
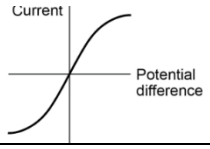
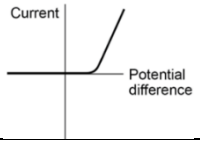
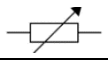
Question	Answer
1. What is oxidation?	When a substance (eg a metal) reacts with oxygen to form an oxide
2. What is reduction?	Removal of oxygen
3. What makes one metal more reactive than another?	How easily it forms an ion
4. Which element is used to extract less reactive metals from their ores?	Carbon
5. What are the products when metals react with acids?	Salt and hydrogen gas
6. What is produced when acids react with bases?	Salt and water
7. What is an alkali?	A soluble base – contains OH^- ions
8. What type of salt is formed if hydrochloric acid is neutralized?	Chloride
9. What type of salt is formed if sulfuric acid is neutralized?	Sulfate
10. What type of salt is formed if nitric acid is neutralized?	Nitrate
11. How can soluble salts be obtained from solutions?	Crystallization / evaporation
12. Which particle makes a solution acidic?	H^+
13. Which particle makes a solution alkaline?	OH^-
14. Write the ionic equation for neutralization	$H^+ + OH^- \rightarrow H_2O$
15. What is the range of pH in the pH scale?	0-14
16. How can pH be measured?	Using universal indicator or a pH probe
17. What is the pH of a neutral solution?	7
18. What is the pH of an acid?	0-6.9
19. What is the pH of an alkali?	7.1-14
Q 20 –28 relate the equipment below which can be used to make copper chloride 	
20. Which acid should be used?	Hydrochloric (to give a chloride)
21. Why is the acid heated?	To speed up the reaction
22. Name a suitable base to neutralize the acid	Copper oxide or copper carbonate
23. Why can copper metal not be used?	Copper does not react with acids
24. Why is the base added in excess?	To make sure the acid is fully neutralized
25. How would you know when the base is in excess?	Solid collects at the bottom of the beaker
26. How could the excess base be removed?	Filter
27. How would the salt be obtained from the solution?	Crystallization / evaporation
28. Name a piece of equipment that the dish could be placed in to crystallise the solution safely	Drying oven

Question	Answer
1. Why can ionic compounds conduct electricity when molten or in solution?	The IONS can move
2. Why can ionic compounds NOT conduct electricity when they are solids?	The ions are unable to move as they are stuck in the lattice
3. What is an electrolyte?	A solution or liquid that is able to conduct electricity
4. What is electrolysis?	Splitting (NOT separating) a compound using electricity
5. Which electrode are positive ions attracted to?	Negative
6. Which electrode are negative ions attracted to?	Positive
7. What is the name of the negative electrode?	Cathode
8. What is the name of the positive electrode?	Anode
9. What happens at the electrodes?	Ions gain or lose electrons to become elements again
10. Which metals are extracted by electrolysis?	Metals that are too reactive to be reduced using carbon
11. Why does electrolysis use a lot of energy?	Lots of energy is needed to melt ionic compounds and then the production of the electric current
12. Why is graphite used in the electrodes?	Because it has delocalized electrons that can move and so it conducts electricity
13. Why is cryolite added to aluminium oxide before electrolysis?	To lower the melting point
14. What is formed at the cathode in the electrolysis of aluminium oxide?	Aluminium
15. What is the product at the anode in the electrolysis of aluminium oxide?	Oxygen
16. Why do the anodes need to be continually replaced?	The oxygen produced reacts with the carbon electrodes to make carbon dioxide
17. What does (aq) mean?	Dissolved in water – an aqueous solution
18. Which ions are also present if an ionic compound is dissolved in water and then electrolysed?	H^+ and OH^- ions
19. Why does hydrogen form at the cathode when solutions are electrolysed?	If the metal in the solution is more reactive than hydrogen, then hydrogen will be released
20. What is formed at the anode if solutions are electrolysed?	Oxygen or, if a halogen is present, the halogen (group 7 element)
Questions 21-26 are about the following equipment, used to electrolyse a solution of copper sulphate 	
21. Complete the diagram to label the other electrode and to complete the supply of electricity	
22. Which ions are present in the solution?	Cu^{2+} H^+ SO_4^{2-} OH^-
23. What will be formed at the cathode and why?	Copper – as it less reactive than hydrogen
24. What will be formed at the anode and why?	Oxygen – there is no halogen present
25. Name a solution that could be used instead of copper sulphate to produce hydrogen at the cathode	Potassium sulphate (substitute any metal that is more reactive than copper)
26. Name a solution that could be used instead of copper sulphate to produce chlorine at the anode	Copper chloride

Question	Answer
1. What are the three types of strong chemical bonds?	Ionic, Covalent and Metallic bonding
2. Metallic bonding can happen due to the electrons in the outer shell being free to move. What word can be used to describe these electrons?	Delocalised
3. Elements in the same group have _ _ _ _ _ _ _ properties	Similar
4. What is a compound?	Atoms of two or more elements chemically combined
5. What is an atom?	The smallest part of an element that can exist
6. What is a mixture?	Two or more elements or compounds not chemically combined together.
7. What method can be sued to separate an insoluble solid from a liquid?	Filtration
8. What method can be used to separate a soluble salt from a liquid?	Crystallisation
9. Why is an atom neutral overall?	Number of positive protons is equal to the number of negative electrons. The positive charge cancels out the negative charge.
10. What is the plum pudding model of the atom?	It is a model that suggests the atom is a ball of positive charge with negative electrons embedded in it.
11. What conclusions can be drawn from the results of the plum pudding model?	That the mass of an atom was concentrated at the centre (nucleus) and that the nucleus was charged.
12. What is the charge of a proton?	+1
13. What is the charge of neutron?	0
14. What is the charge of an electron?	-1
15. What is the mass of a proton?	1
16. What is the mass of a neutron?	1
17. What is the mass of an electron?	0.0005 (very small)
18. The relative atomic mass of an element takes into account the abundance of _____ of the element.	Isotopes
19. What is the maximum number of electrons that can be in the first electron shell?	2
20. What is the maximum number of electrons that can be in the second shell?	8
21. Conservation of mass states that no atoms are _____ or _____ during a chemical reaction.	Lost or Made
22. Calculate the formula mass of ammonia (NH_3).	14 + (3x1) = 17
23. If the mass appears to change in a reaction and increase/decrease, what might the reactant/product be?	A gas
24. What is the range in a set of data?	The difference between the largest and smallest values.
25. What units are used to measure the concentration of a solution?	grams per dm3 (g/dm3)
26. What type of reaction has this kind of reaction profile? 	Exothermic reaction
27. What kind of reaction has this kind of reaction profile? 	Endothermic reaction

Question	Answer
1. Name the 8 energy stores	Kinetic, magnetic, nuclear, electrostatic, gravitational potential, elastic potential, chemical, thermal
2. Which energy store is filled when an object is lifted upwards?	Gravitational potential
3. Which energy store is filled when an elastic object is stretched or squashed?	Elastic potential
4. Which energy store is filled when an object is moving?	Kinetic
5. If an object falls from a height, which energy store decreases?	Gravitational potential
6. If an object falls from a height, which energy store fills?	Kinetic
7. During an energy transfer, which store is filled when energy is 'wasted' or dissipated?	Thermal store of the environment
8. What unit should mass always be in for a calculation?	Kilograms
9. What is the unit for velocity?	m/s
10. What sort of relationship is shown by the graph: 	Directly proportional
11. What is the specific heat capacity?	The amount of energy needed to raise the temperature of 1Kg of a substance by 1°C
Q 12 – 16 relate to the equipment below, which is used to calculate the specific heat capacity of the block. 	
12. How is the mass of the block measured?	Using a balance / weighing scales
13. Why is water placed in the hole with the thermometer?	To improve the contact with the block (air is an insulator)
14. What is the heater for?	To transfer energy to the block
15. Why would the value calculated for specific heat capacity using this method be much higher than the true value?	A lot of energy is transferred from the block to the thermal store of the environment
16. Name one improvement to the method.	Insulate the block
17. What is power?	The rate at which energy is transferred
18. What is the unit for power?	Watts (W)
19. What is 1 Watt equivalent to in joules?	1 joule per second
20. If the motors shown below both lift the same object, but one is more powerful, what would be the difference? 	One would lift faster

Question	Answer
1. What are fossil fuels?	Fuels formed from remains of plants and animals from millions of years ago
2. What does non-renewable mean?	Will run out one day – are finite
3. Which fossil fuel was formed from the remains of dead plants?	Coal
4. What are our main uses for energy resources?	Transport, generating electricity, heating
5. Which energy resource involves burning of wood or peat?	Biofuel
6. Which energy resource involves the use of heat from the Earth's core to heat water?	Geothermal
7. Give two disadvantages of using fossil fuels	Release carbon dioxide, release sulfur dioxide, damage habitats when extracted
8. Why might fossil fuels still be chosen to produce electricity, even though we know about their environmental effects?	They are reliable and plentiful (at the moment)
9. Which fossil fuel can release sulfur dioxide?	Coal (or oil)
10. What environmental issue does sulfur dioxide cause?	Acid rain
11. What are 'renewable' energy resources?	Ones that are not used up / are replenished as they are used
12. Which renewable resource uses water falling from a height?	Hydroelectric
13. Name an environmental disadvantage with renewable resources such as solar or wind	They can damage habitats as they need a lot of space
14. Other than environment, what is the main disadvantage of using solar or wind to generate electricity?	They are unreliable – it isn't always sunny or windy
15. Which energy resource involves using uranium or plutonium in a reactor?	Nuclear
16. Name one advantage of nuclear resources	It doesn't produce any carbon dioxide
17. Give one disadvantage of using nuclear fuel	Produce dangerous nuclear waste
18. Which energy resources are the most commonly used for transport?	Fossil fuels (mostly oil)
19. Name the source of energy for solar cells	The sun
20. Which energy resources use the kinetic energy of the sea?	Tidal or wave
21. What is the equation to calculate efficiency?	Efficiency = useful output energy transfer ÷ total input energy transfer

Question	Answer
1. What is electricity?	A flow of charge
2. What is current?	The **rate** of flow of charge
3. What are the units for current?	Amps (A)
4. What are the units for charge?	Coulombs
5. What is this component? 	Fixed or ohmic resistor
6. What is this component? 	Dioide
7. What is this component? 	Thermistor
8. What is this component? 	Light dependent resistor (LDR)
9. What is this component? 	Light emitting diode (LED)
10. What is the unit for potential difference?	Volts (V)
11. What is the unit for resistance?	Ohms (Ω)
12. What is the relationship shown: 	Directly proportional
13. Which component gives the relationship shown in Q 12?	Fixed/ohmic resistor
14. Which component gives this relationship in a circuit: 	Filament lamp
15. Why does the current stop increasing even when the pd increases in a filament bulb?	The resistance increases as the bulb gets hot
16. Which component gives this relationship: 	Diode
17. What happens to resistance in a thermistor as the temperature increases?	The resistance decreases
18. What happens to resistance in a light dependent resistor when light intensity increases?	The resistance decreases
19. How does a diode only allow current in one direction?	It has very high resistance in the other direction
20. Which component is shown : 	Variable resistor
21. Write the equation that links energy transferred, power and time.	Energy transferred = power x time
22. What is the rule for current in series circuits?	There is the same current through each component
23. What is the rule for p.d. in a parallel circuit?	The potential difference across each component is the same
24. What is the National Grid?	A system of cables and transformers linking power stations to consumers.
25. What is the difference between direct and alternatinf potential difference?	Direct current, flows uniformly in one direction while alternating current, changes direction at a given rate or frequency.
26. What colour is the live wire? Neutral wire? And Earth wire?	Live- Brown, Neutral- Blue Earth- Green and Yellow Stripes

Question	Answer
1. Which state of matter has particles in ordered neat rows that are all touching?	Solid
2. Which states of matter cannot be compressed (squashed)	Solid
3. What words can be used to describe the arrangement and motion of the particles in a gas?	Far apart, random
4. In which state of matter is the attraction between the particles the strongest?	Solid
5. Why does 1Kg of a solid take up less space than a Kg of gas?	The particles are all close together in a solid, whereas in a gas they are spread out
6. Why are liquids and gases able to flow?	The attraction between the particles is weak so they are able to move around each other
7. Name the change of state when a liquid turns into a gas	Evaporation
8. Name the change of state when a gas turns into a liquid	Condensation
9. Which change of state occurs when a solid melts?	Melting
10. What happens to the temperature of a substance while a change of state happens?	It remains constant
11. What happens to the mass of a substance during a change of state?	It remains constant
12. What are the units for mass?	Kg
13. What are the units for volume?	cm^3 or m^3
14. What are the units for density?	Kg/m^3
15. Name the change of state when a solid turns straight into a gas	Sublimation
16. How should the particles in a solid be drawn?	In neat rows, all touching
17. How should the particles in a liquid be drawn?	Randomly, but all touching
18. How should the particles in a gas be drawn?	Randomly, and spaced far apart
19. What name is given to the temperature at which a solid turns into a liquid or a liquid turns into a solid?	Melting point
20. What term is given to the temperature at which a liquid turns into a gas or a gas turns back into a liquid?	Boiling point
21. Internal energy is the total _____ energy and _____ energy of all the particles (atoms and molecules) that make up a system.	Kinetic and Potential
22. What is specific heat capacity?	The amount of energy required to raise the temperature of one kilogram of the substance by one degree Celsius.
23. What is latent heat?	The energy needed for a substance to change state is called latent heat.
24. How can the volume of irregular objects be determined?	Displacement of water
25. What is the equation to calculate density?	Density = mass ÷ symbol

Question	Answer
1. What is radioactive decay?	When an atom emits particles and/or energy from its nucleus in order to become stable
2. What is the rate at which decay takes place known as?	Activity
3. What is activity measured in?	Becquerel
4. Name the 4 main types of radiation	Alpha, beta, gamma, neutron
5. What does an alpha particle consist of?	2 protons and 2 neutrons
6. Which structure does an alpha particle resemble?	A helium nucleus
7. What is a beta particle?	An electron
8. How is a beta particle formed?	A neutron splits into a proton and an electron
9. What is a 'gamma ray'?	An EM wave from the nucleus
10. Which of the types of radiation has the shortest range in air (can travel least far)	Alpha
11. Which one can travel the furthest?	Gamma
12. Which type of radiation is the most ionizing?	Alpha
13. Which type of radiation is the most penetrating?	Gamma
14. What is 'half life'?	The time it takes for the count rate to fall to half its initial value or the time taken for half of the atoms in a sample to decay
15. In nuclear equations, what are the two ways an alpha particle can be represented?	$^{4}_{2}\mathrm{He}$ OR $^{4}_{2}\alpha$
16. How is a beta particle represented in nuclear equations?	$^{0}_{-1}\mathrm{e}$ OR $^{0}_{-1}\beta$
17. What is radioactive contamination?	The unwanted presence of radioactive atoms
18. What determines the level of hazard from contamination?	The type of radiation they emit (whether alpha, beta, gamma etc) and where the contamination is (breathed in, on skin etc)
19. What is irradiation?	Exposure to one of the types of radiation – e.g alpha, beta, gamma etc
20. Why is it important that any findings on the effects of radiation on humans are published?	So they can be checked by other scientists
21. What is the basic structure of an atom?	A positively charged nucleus composed of both protons and neutrons surrounded by negatively charged electrons in shells.
22. What is the mass number of an atom?	The total number of protons and neutrons in an atom.
23. What is the atomic number of an atom?	The number of protons in the nucleus of an atom.
24. What is an isotope?	Atoms of the same element that have different numbers of neutrons.
25. Which scientist provided evidence to show the existence of neutrons in the nucleus of the atom?	James Chadwick