Year 11

Paper 2

Key Knowledge Questions and Answers

1. Use the questions and answer pages to revise key knowledge
2. Use the question and blank answer columns for retrieval practice

Biology: Ecology

	Question	Answer
1	The interaction of a community of living organisms with the non-living parts of their environment is called what?	Ecosystem
2	Give 4 things which plants compete for	Space, water, mineral ions and light
3	Give 3 things which animals compete for	Food, mates, territory
4	What is it called when one species depends on another for survival?	Interdependence
5	What are the non-living factors which affects communities called?	Abiotic factors
6	Give 3 examples of abiotic factors	Light intensity, temperature and soil pH
7	What are living factors which affect communities called?	Biotic factors
8	Give 3 examples of biotic factors	Availability of food, new predators and new pathogens
9	What is the square frame called used in sampling?	A quadrat
10	Why is it important to do random sampling?	To reduce bias
11	How is transect line sampling carried out?	Measuring tape on the ground and place the quadrat at regular intervals
12	How is random sampling carried out?	2 measuring tapes on the ground perpendicular to each other. Place the quadrat on the ground at random numbers (use random number generator)
13	How do you calculate the mean?	Add all the numbers up and divide by how many data points you have
14	How do you calculate the mode?	Most often occurring data point
15	How do you calculate the range?	The largest-smallest data point
16	What are the 3 types of adaptation?	Structural, physiological, behavioural
17	What are organisms called that live in very extreme environments?	Extremophiles
18	What are organisms which produce their own food using photosynthesis called?	Producers
19	What is an animal that hunts and kills other animals called?	Predator
20	What is an animal that gets hunted and killed by another animal called?	Prey
21	Name 1 process which takes carbon dioxide in from the atmosphere	Photosynthesis
22	Name 2 processes which release carbon dioxide into the atmosphere	Respiration and combustion
23	Define biodiversity	The variety of all the different species of organisms on Earth, or within an ecosystem
24	Give 2 examples of how programmes have been introduced to reduce the negative effects of humans on biodiversity	Breeding programmes for endangered species and protection and regeneration of rare habitats
25	What effect does pollution have on biodiversity?	Pollution decreases biodiversity
26	Sewage, fertiliser and toxic chemicals all contribute to which type of pollution?	Water pollution
27	Smoke and acidic gases contribute to which type of pollution?	Air pollution
28	Landfill contributes to which type of pollution?	Land pollution
29	Which gas is released when peat is burnt?	Carbon dioxide
30	State a negative impact of peat bog destruction.	Loss of habitats

Self-Assess:

	Question	Answer
1	The interaction of a community of living organisms with the non-living parts of their environment is called what?	
2	Give 4 things which plants compete for	
3	Give 3 things which animals compete for	
4	What is it called when one species depends on another for survival?	
5	What are the non-living factors which affects communities called?	
6	Give 3 examples of abiotic factors	
7	What are living factors which affect communities called?	
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9	What is the square frame called used in sampling?	
10	Why is it important to do random sampling?	
11	How is transect line sampling carried out?	
12	How is random sampling carried out?	
13	How do you calculate the mean?	
14	How do you calculate the mode?	
15	How do you calculate the range?	
16	What are the 3 types of adaptation?	
17	What are organisms called that live in very extreme environments?	
18	What are organisms which produce their own food using photosynthesis called?	
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29	Which gas is released when peat is burnt?	
30	State a negative impact of peat bog destruction.	

Inheritance, variation and Evolution

	Question	Answer
1	How many pairs of chromosomes do human body cells have?	23
2	What are the sex chromosomes in humans for a female?	XX
3	What are the sex chromosomes in humans for a male?	XY
4	Define a gene	Section of DNA that codes for a protein
5	What are chromosomes and genes made up of?	DNA
6	True or false - DNA is a polymer	True
7	Describe the shape of DNA	Double helix made up of 2 strands
8	Define genome.	The entire genetic material of that organism
9	What is the name of the cell division which takes place in the reproductive organs?	Meiosis
10	What is another term for gametes?	Sex cells
11	What are the gametes in humans?	Males = sperm cells Female = egg cells
12	How many chromosomes do gametes have?	23
13	How many times does the cell divide in meiosis?	2
14	How many gametes are produced in meiosis?	4
15	In meiosis, are the daughter cells produced genetically identically or genetically different to each other?	Genetically different
16	What happens to the gametes during fertilisation?	The nuclei of the gametes join
17	Why is it important that gametes have half the number of chromosomes?	So that when fertilisation happens, the full chromosome number is restored
18	How many parents are involved in sexual reproduction?	2
19	In which type of reproduction do you get genetically different offspring?	Sexual reproduction
20	Which type of reproduction only involves mitosis?	Asexual reproduction
21	Define an allele	Different form of the same gene
22	Which type of allele is always expressed even if only one copy is present?	Dominant allele
23	Which type of allele is only expressed if two copies ae present?	Recessive allele
24	What word is used to describe when the two alleles present are the same?	Homozygous
25	What word is used to describe when the two alleles present are different?	Heterozygous
26	Capital letters are used to represent which type of allele?	Dominant allele
27	What is the main symptom of polydactyl?	Extra finger or toe
28	A mutation in which type of allele causes polydactyl?	Dominant allele
29	Which part of the cell is affected by cystic fibrosis?	Cell membrane
30	A mutation in which type of allele causes cystic fibrosis?	Recessive allele
31	Define a species	Group of similar organisms who can reproduce to form fertile offspring

32	What key word can be used to describe differences in a population?	Variation
33	Variation can be caused by genes. What else can cause variation?	The environment
34	Define a mutation	Change in the DNA sequence
35	True or false - most mutations lead to a change in phenotype	False
36	What is the name of the theory that states that all species of living things have evolved from simpler life forms?	Theory of evolution by natural selection
37	Define extinction	When there are no remaining individuals of a species alive
38	Give 3 factors which could lead to extinction of a species	New predators, new disease and new competitors
39	Define a fossil	Remains of organisms from millions of years ago
40	Give 2 reasons why the fossil record is incomplete	Many early life forms were soft bodies, and geological activity has destroyed them
41	What do bones get replaced with as decay of a dead animal happens?	Minerals from the soil
42	What happens when antibiotic resistant bacteria are exposed to an antibiotic?	They survive and reproduce and pass their resistance on to their offspring
43	True or false - when antibiotic resistant bacteria reproduce, they pass on the allele for antibiotic resistance to their offspring	True
44	Give 3 ways in which we can reduce the rate of development of antibiotic-resistant strains of bacteria.	Only prescribe antibiotics, when necessary, complete the full course of antibiotics and restrict the use of agricultural antibiotics
45	What is the process called in which humans breed plants and animals for particular characteristics?	Selective breeding
46	What is the first step in selective breeding?	Choose parents with the desired characteristic from a population
47	Once the first round of offspring have been produced in selective breeding, what happens?	Breed together the offspring with the desired characteristics
48	Selective breeding can lead to 'inbreeding.' Why is this problematic?	As they are prone to disease or inherited defects
49	What is the process called which involves modifying the genome of an organism by introducing a gene from another organism?	Genetic engineering
50	Give 2 reasons why plant crops have been genetically engineered?	To be resistant to diseases and to produce bigger fruits
51	What are crops called that have had their genes modified?	GM crops
52	Give 2 concerns around GM crops	Unknown long term human health effects and the possible effects on populations of wildflowers and insects
53	What mnemonic can be learnt to remember the order of classification?	Delicious king prawn curry or fat greasy sausages
54	List the order of classification	Domain, kingdom, phylum, class, order, family, genus, species
55	Who devised the order of classification?	Carl Linnaeus

56	What is the binomial name made up of?	Genus and species
57	List the 3 domains	Bacteria, eukaryote and archaea

Self-Assess:

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54	List the order of classification	
55	Who devised the order of classification?	
56	What is the binomial name made up of?	
57	List the 3 domains	

Homeostasis

	Question	Answer
1	What is the regulation of the internal conditions of an organism to maintain optimum conditions in response to internal and external changes called?	Homeostasis
2	In the human body, give 3 examples of homeostatic control	Blood glucose concentration, body temperature and water levels
3	Receptors are a type of cell. What is the function of a receptor?	Detect stimuli
4	What is the function of coordination centres?	Receive and process information from receptors
5	Give 3 examples of coordination centres in the human body.	Brain, spinal cord and pancreas
6	What is the function of an effector?	Bring about the response which restores optimum levels
7	Give 2 examples of effectors within the human body.	Muscles or glands
8	Which organ system within the human body enables us to react to our surroundings and co-ordinate our behaviour?	Nervous system
9	What are the 2 components of the central nervous system?	Brain and spinal cord
10	Which type of neurone connects the receptor to the central nervous system?	Sensory neurone
11	Which type of neurones transmits impulses from the brain or spinal cord to the effector?	Motor neurone
12	What is the name of the neurone found within the CNS which connects the sensory and motor neurone?	Relay neurone
13	What is the gap between 2 neurones called?	Synapse
14	What happens when a nerve impulse arrives at the end of the first neurone?	It triggers the release of neurotransmitters
15	By which method of cell transport do the neurotransmitters move across the synapse?	Diffusion
16	How would you describe the speed of a reflex action?	Rapid
17	True or false - reflex actions do involve the conscious part of the brain.	False
18	Define a hormone.	Chemical messenger which travels in the bloodstream
19	Which system has a faster speed- the nervous system or the endocrine system?	Nervous system
20	Which system has an effect for longer - the nervous system or the endocrine system?	Endocrine system

21	Which gland in the body is referred to as the 'master gland?	Pituitary gland
22	What do glands secrete?	Hormones
23	Which organ is responsible for monitoring and controlling blood glucose concentration?	Pancreas
24	After eating the blood glucose concentration will increase, which hormone is released?	Insulin
25	What happens to glucose in the blood stream when insulin is released?	Glucose moves from the blood into cells
26	What happens to glucose in the liver and muscle cells when insulin is released?	Glucose is converted into glycogen for storage
27	Which type of diabetes is caused by the pancreas failing to produce sufficient insulin?	Type 1
28	How is type 1 diabetes treated?	Insulin injections
29	Which type of diabetes is caused by the body cells no longer responding to insulin?	Type 2
30	Which type of diabetes has obesity as a risk factor?	Type 1
31	Give 2 treatments for type 2 diabetes.	Low carbohydrate-controlled diet and exercise
32	What is the main male reproductive hormone?	Testosterone
33	Where is testosterone produced?	In the testes
34	What is the role of testosterone in males?	Stimulates sperm production
35	What is the main female reproductive hormone?	Oestrogen
36	Where is oestrogen produced?	In the ovaries
37	What is the average length of the menstrual cycle?	28 days
38	What is the role of FSH in the menstrual cycle?	Causes an egg to mature in the ovaries
39	What is the role of LH in the menstrual cycle?	Causes the release of a mature egg
40	Which 2 hormones are involved in maintaining the uterus lining?	Oestrogen and progesterone
41	What is the only type of contraception which will protect against STIs?	Condoms
42	How do spermicides work?	Kill or disable sperm
43	How do oral contraceptives prevent pregnancy?	Inhibit FSH production so no eggs mature
44	The injection, implant and skin patch all cause slow release of progesterone. What is the effect of this?	Inhibits the maturation and release of eggs
45	How do intrauterine devices (such as the coil) work?	Prevent the implantation of an embryo

Self-Assess:

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3	Receptors are a type of cell. What is the function of a receptor?	
4	What is the function of coordination centres?	
5	Give 3 examples of coordination centres in the human body.	
6	What is the function of an effector?	
7	Give 2 examples of effectors within the human body.	
8	Which organ system within the human body enables us to react to our surroundings and co-ordinate our behaviour?	
9	What are the 2 components of the central nervous system?	
10	Which type of neurone connects the receptor to the central nervous system?	
11	Which type of neurones transmits impulses from the brain or spinal cord to the effector?	
12	What is the name of the neurone found within the CNS which connects the sensory and motor neurone?	
13	What is the gap between 2 neurones called?	
14	What happens when a nerve impulse arrives at the end of the first neurone?	
15	By which method of cell transport do the neurotransmitters move across the synapse?	
16	How would you describe the speed of a reflex action?	
17	True or false - reflex actions do involve the conscious part of the brain.	
18	Define a hormone.	
19	Which system has a faster speed- the nervous system or the endocrine system?	
20	Which system has an effect for longer - the nervous system or the endocrine system?	
21	Which gland in the body is referred to as the 'master gland?	

22	What do glands secrete?	
23	Which organ is responsible for monitoring and controlling blood glucose concentration?	
24	After eating the blood glucose concentration will increase, which hormone is released?	
25	What happens to glucose in the blood stream when insulin is released?	
26	What happens to glucose in the liver and muscle cells when insulin is released?	
27	Which type of diabetes is caused by the pancreas failing to produce sufficient insulin?	
28	How is type 1 diabetes treated?	
29	Which type of diabetes is caused by the body cells no longer responding to insulin?	
30	Which type of diabetes has obesity as a risk factor?	
31	Give 2 treatments for type 2 diabetes.	
32	What is the main male reproductive hormone?	
33	Where is testosterone produced?	
34	What is the role of testosterone in males?	
35	What is the main female reproductive hormone?	
36	Where is oestrogen produced?	
37	What is the average length of the menstrual cycle?	
38	What is the role of FSH in the menstrual cycle?	
39	What is the role of LH in the menstrual cycle?	
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45	How do intrauterine devices (such as the coil) work?	

Chemistry: Rates of Reactions

	Question	Answer
1	Define activation energy	Minimum amount of energy needed for a reaction to start
2	If particles collide with each other more, what happens to the rate of the reaction?	Rate of reaction increases
3	How do you calculate the rate of reaction if you know the quantity of reactant used?	Quantity of reactant used / time
4	Which piece of equipment can be used to measure the volume of gas produced?	Gas syringe
5	Why does the reaction slow down as it progresses?	As there are fewer reactant particles available for collisions
6	What happens to the rate of reaction as the concentration increases?	Rate of reaction increases
7	Why does increasing the concentration increase the rate of reaction?	More reactant particles available to react per unit of volume, so there are more frequent collisions.
8	What happens to the rate of reaction as temperature increases?	Rate of reaction increases
9	Why does increasing the temperature increase the rate of reaction?	As reactant particles have more kinetic energy they move faster, so there are more frequent collisions between the particles and the collisions are more likely to have the activation energy for a reaction.
10	Pressure applies to which state of matter?	Gases
11	What happens to the rate of reaction as the pressure increases?	Rate of reaction increases
12	Why does increasing the pressure increase the rate of reaction?	There are more gas particles in each unit volume, so the particles are closer together, so there are more frequent collisions.
13	What happens to the rate of reaction as the surface area increases?	Rate of reaction increases
14	Why does increasing the surface area increase the rate of reaction?	There is are more reactant particles available to react on the surface, so there are more frequent collisions.
15	Define a catalyst	A substance which speeds up the rate of a reaction without being used up itself
16	How does a catalyst affect the activation energy?	Reduces the activation energy
17	Define equilibrium	Rate of the forwards reaction equals the rate of the reverse reaction in a closed system
18	What is a closed system?	When nothing can enter or leave

Self-Assess:

	Question	Answer
1	Define activation energy	
2	If particles collide with each other more, what happens to the rate of the reaction?	
3	How do you calculate the rate of reaction if you know the quantity of reactant used?	
4	Which piece of equipment can be used to measure the volume of gas produced?	
5	Why does the reaction slow down as it progresses?	
6	What happens to the rate of reaction as the concentration increases?	
7	Why does increasing the concentration increase the rate of reaction?	
8	What happens to the rate of reaction as temperature increases?	
9	Why does increasing the temperature increase the rate of reaction?	
10	Pressure applies to which state of matter?	
11	What happens to the rate of reaction as the pressure increases?	
12	Why does increasing the pressure increase the rate of reaction?	
13	What happens to the rate of reaction as the surface area increases?	
14	Why does increasing the surface area increase the rate of reaction?	
15	Define a catalyst	
16	How does a catalyst affect the activation energy?	
17	Define equilibrium	
18	What is a closed system?	

Organic Chemistry

1	Where is crude oil found?	In rocks
2	What type of fossil fuel is the remains of ancient biomass consisting mainly of plankton that was buried in mud?	Crude oil
3	What does finite mean?	It is being used up more quickly than it is being produced
4	Which 2 elements make up hydrocarbons?	Hydrogen and carbon
5	How many carbon atoms does methane have?	1
6	How many carbon atoms does ethane have?	2
7	How many carbon atoms does propane have?	3
8	How many carbon atoms does butane have?	4
9	How does the length of the alkane affect its boiling point?	As the alkane length increases, so does the boiling point
10	What happens to the strength of intermolecular forces as the length of the alkane increases?	The strength of intermolecular forces increases as the length of the alkane increases
11	Shorter alkanes are more volatile. What does volatile mean?	Turn into gases at a lower temperature
12	Longer chains alkanes are more viscous than shorter chains. What does viscous mean?	How easily a substance flows
13	Why do longer chain alkanes have a higher viscosity?	As the longer chains are easily entangled and so it is difficult for molecules to flow over each other
14	Short chain alkanes have a high flammability. What does flammability mean?	How easy it is to set a substance on fire
15	From which fossil fuel does petrol originate from?	Crude oil
16	What is a mixture of hydrocarbons with similar boiling points called?	Fractions
17	Which part of the fractionating column is the hottest?	The bottom
18	Which state of matter is crude oil in when it enters the fractionating column?	A gas
19	What happens to the crude oil fractions when they cool to the boiling point?	They condense and turn from a gas into a liquid
20	In a fractionating column, where do the smallest molecules separate out?	At the top
21	Why do the smallest molecules separate out at the top of the fractionating column?	As they have the lowest boiling point and it is the coolest at the top of the column
22	What are the 2 products when a long chain alkane is cracked?	Short chain alkane and an alkene
23	In which type of hydrocarbon do you find carbon=carbon double bonds?	Alkenes
24	Which reagent is used to test for the presence of alkenes?	Bromine water
25	What is the colour change of bromine water when added to an alkene?	Orange to colourless
26	Give 2 uses of alkenes	Production of polymers and plastics
27	What are the 2 types of cracking?	Thermal and catalytic
28	Which 2 conditions are needed for catalytic cracking?	High temperatures and a catalyst
29	Which two conditions are needed for thermal cracking?	High temperatures and steam

Self-assess:

1	Where is crude oil found?	
2	What type of fossil fuel is the remains of ancient biomass consisting mainly of plankton that was buried in mud?	
3	What does finite mean?	
4	Which 2 elements make up hydrocarbons?	
5	How many carbon atoms does methane have?	
6	How many carbon atoms does ethane have?	
7	How many carbon atoms does propane have?	
8	How many carbon atoms does butane have?	
9	How does the length of the alkane affect its boiling point?	
10	What happens to the strength of intermolecular forces as the length of the alkane increases?	
11	Shorter alkanes are more volatile. What does volatile mean?	
12	Longer chains alkanes are more viscous than shorter chains. What does viscous mean?	
13	Why do longer chain alkanes have a higher viscosity?	
14	Short chain alkanes have a high flammability. What does flammability mean?	
15	From which fossil fuel does petrol originate from?	
16	What is a mixture of hydrocarbons with similar boiling points called?	
17	Which part of the fractionating column is the hottest?	
18	Which state of matter is crude oil in when it enters the fractionating column?	
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20	In a fractionating column, where do the smallest molecules separate out?	
21	Why do the smallest molecules separate out at the top of the fractionating column?	
22	What are the 2 products when a long chain alkane is cracked?	
23	In which type of hydrocarbon do you find carbon=carbon double bonds?	
24	Which reagent is used to test for the presence of alkenes?	
25	What is the colour change of bromine water when added to an alkene?	
26	Give 2 uses of alkenes	
27	What are the 2 types of cracking?	
28	Which 2 conditions are needed for catalytic cracking?	
29	Which two conditions are needed for thermal cracking?	

Chemical Analysis

1	What is a single element or compound not mixed with any other substance called?	Pure substance
2	Which type of substance has a distinct melting and boiling point?	Pure substance
3	Which type of substance has a range of melting and boiling points?	Impure substance
4	Define a formulation.	A mixture that has been designed as a useful product
5	What is the stationary phase in chromatography?	The paper
6	What is the mobile phase in chromatography?	The solvent
7	Why is it important the line in chromatography is drawn in pencil?	As otherwise the ink will mix with the solvent
8	Why is it important that the solvent sits below the pencil line?	As otherwise the ink would dissolve
9	What should the Rf value always be between?	0-1
10	What is the name of the test used to test for hydrogen gas?	Squeaky pop test
11	How do you carry out the squeaky pop test?	Burning splint at the open end of a test tube of gas. It will produce a pop sound.
12	How do you test for the presence of oxygen?	Glowing splint will relight
13	How do you test for the presence of carbon dioxide?	Bubble through limewater. Limewater will go cloudy
14	How do you test for the presence of chlorine?	Damp blue litmus paper will turn white

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Earth's Atmosphere

1	Which gas makes up approximately 80% of the atmosphere today?	Nitrogen
2	How much of the atmosphere today is made up from oxygen?	20%
3	Which planets atmospheres are thought to be similar to the Earth's early atmosphere?	Venus and Mars
4	Where did nitrogen in the early atmosphere come from?	Volcanic eruptions
5	When the temperature on Earth started to cool, what happened to the water vapour?	It condensed to form the oceans
6	When the oceans had formed, which gas from the atmosphere dissolved in them?	Carbon dioxide
7	What is the name of the process carried out by algae plants that increased the levels of oxygen in the atmosphere?	Photosynthesis
8	Name 3 processes which led to the reduction of carbon dioxide within the atmosphere.	Dissolving in oceans, evolution of photosynthesis and formation of sedimentary rocks
9	Name the 3 greenhouse gases.	Methane, carbon dioxide and water vapour
10	Why is the presence of greenhouse gases within the atmosphere important?	As they maintain temperatures on Earth high enough to support life
11	The Sun emits which length of infrared waves?	Short wavelength
12	When the infrared waves are reflected, what happens to their wavelength?	Length increases
13	Give 2 human activities which increase the amount of carbon dioxide in the atmosphere.	Deforestation and increased burning of fossil fuels
14	Give 2 human activities which increase the amount of methane in the atmosphere.	Increase in cattle farming, increase in rice paddies.
15	Give 4 potential effects of global climate change.	Melting of the polar ice caps, sea levels rising, more extreme weather conditions, extinction of animals
16	Define carbon footprint.	Total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product
17	How could you reduce your own emissions of methane?	Eat less beef and rice
18	How could you reduce your own emissions of carbon dioxide?	Cycle or walk to school
19	What are the products of complete combustion of a fuel?	Carbon dioxide and water
20	What are the products of incomplete combustion of a fuel?	Carbon monoxide, carbon and water
21	What is problematic about the production of carbon monoxide?	It is colourless, odourless and toxic
22	Give 2 effects of particulates being produced through incomplete combustion.	Global dimming and health problems for humans
23	What is a consequence of sulphur dioxide being produced when fuels are burnt?	Acid rain
24	How are nitrogen oxides produced during combustion?	The nitrogen and oxygen from the air react in the hot engine
25	Production of sulphur dioxide and nitrogen oxides can lead to acid rain. Give 2 effects of acid rain on the environment.	Damage to plants and wildlife, erosion of limestone structures

Self-Assess:

1	Which gas makes up approximately 80% of the atmosphere today?	
2	How much of the atmosphere today is made up from oxygen?	
3	Which planets atmospheres are thought to be similar to the Earth's early atmosphere?	
4	Where did nitrogen in the early atmosphere come from?	
5	When the temperature on Earth started to cool, what happened to the water vapour?	
6	When the oceans had formed, which gas from the atmosphere dissolved in them?	
7	What is the name of the process carried out by algae plants that increased the levels of oxygen in the atmosphere?	
8	Name 3 processes which led to the reduction of carbon dioxide within the atmosphere.	
9	Name the 3 greenhouse gases.	
10	Why is the presence of greenhouse gases within the atmosphere important?	
11	The Sun emits which length of infrared waves?	
12	When the infrared waves are reflected, what happens to their wavelength?	
13	Give 2 human activities which increase the amount of carbon dioxide in the atmosphere.	
14	Give 2 human activities which increase the amount of methane in the atmosphere.	
15	Give 4 potential effects of global climate change.	
16	Define carbon footprint.	
17	How could you reduce your own emissions of methane?	
18	How could you reduce your own emissions of carbon dioxide?	
19	What are the products of complete combustion of a fuel?	
20	What are the products of incomplete combustion of a fuel?	
21	What is problematic about the production of carbon monoxide?	
22	Give 2 effects of particulates being produced through incomplete combustion.	
23	What is a consequence of sulphur dioxide being produced when fuels are burnt?	
24	How are nitrogen oxides produced during combustion?	
25	Production of sulphur dioxide and nitrogen oxides can lead to acid rain. Give 2 effects of acid rain on the environment.	

Using Resources

1	Define sustainable development.	Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.
2	Why is it important to recycle?	To conserve finite resources
3	Give 2 environmental disadvantages of quarrying and mining.	Destruction of animal habitats and fewer trees to absorb carbon dioxide
4	What is the purpose of a life cycle assessment?	Calculates the total environmental impact of a product or service
5	How can we reduce the effects of bias in life cycle assessments?	By using peer review
6	What is water that is safe to drink called?	Potable water
7	Why is fresh water passed through filter beds in water treatment?	To remove solid particles and debris
8	Why is sterilisation of water important?	To kill bacteria
9	Name 2 chemical sterilising agents	Chlorine and ozone
10	Name 1 non-chemical sterilising agent.	UV light
11	In countries with a limited supply of fresh water, desalination of sea water may have to occur. What does desalination mean?	Removal of salt
12	Name the 2 processes which can be used for desalination of sea water.	Distillation and reverse osmosis
13	Why does waste water need to be treated before it is released into the environment?	So that it doesn't cause damage to the environment
14	Waste water comes from 3 sources what are these 3 sources?	Sewage, agricultural waste and industrial waste
15	Agricultural waste water and sewage require the removal of 2 things - what are these 2 things?	Organic matter and harmful microbes
16	Screening is the first stage of sewage treatment. What does screening separate?	Insoluble solids from liquids
17	Sedimentation is the second stage of sewage treatment. What does sedimentation separate?	Effluent from sludge
18	Sludge is produced in sewage treatment. Name 2 uses of sludge.	Used as a fertiliser and produces biogas to make electricity
19	The effluent is aerobically digested which removes organic matter and harmful microbes. As it is aerobic process, what is required?	Oxygen
20	Which is the easiest way to obtain potable water and why?	Fresh water as it uses the least equipment and the least energy
21	Which is the hardest way to obtain potable water and why?	Desalination as it uses the most energy

Self-Assess:

1	Define sustainable development.	
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Forces and Motion

1	What is the name of the force between 2 moving objects in contact?	Friction
2	Is friction an example of a contact or a non-contact force?	Contact
3	What is the upwards force acting in liquids and gases called?	Upthrust
4	What is the force between charged particles called?	Electrostatic
5	What is the force provided by engine and muscles called?	Thrust
6	What is the force in elastic objects trying to pull them back to their original shape called?	Tension
7	Is water resistance an example of a contact or non-contact force?	Contact
8	Which type of quantity has magnitude only?	Scalar
9	Which type of quantity has magnitude and direction?	Vector
10	What is the unit for forces?	Newtons
11	What type of quantity are forces?	Vector
12	If forces are acting in the same direction, what do you do?	Add them together
13	If an object is stationary and the resultant force is zero, what will happen to the motion?	It will remain stationary
14	If an object is moving and the resultant force is zero, what will happen to the motion?	It will continue to move in the same direction at the same speed
15	What happens to the motion of an object is the resultant force is acting in the opposite direction to movement?	It will decelerate
16	What is the unit for mass?	kg
17	What is the name of the force acting on an object due to gravity called?	Weight
18	State the equation that links mass, weight and gravitational field strength	weight = mass x gravitational field strength
19	What are the units for gravitational field strength?	N/kg
20	What is the relationship between the weight and mass of an object?	Directly proportional
21	Define work done	Amount of force required to make an object move over a distance
22	State the equation that links force, distance and work done	work done = force x distance
23	What is the unit for work done?	Joules
24	What is the unit for distance?	metres
25	What type of quantity is speed?	Scalar
26	What is the unit for speed?	m/s
27	What is the typical speed of walking?	1.5m/s
28	What is the typical speed of running?	3m/s
29	What is the typical speed of cycling?	6m/s
30	What is the speed of sound in air?	300m/s
31	State the equation that links speed, distance and time	Distance = speed x time

32	What does a straight diagonal line represent on a distance-time graph?	Object is travelling at a constant speed
33	What does a horizontal line represent on a distance-time graph?	Object is stationary
34	What does a curved line represent on a distance-time graph?	Object is accelerating
35	What is speed in a given direction called?	Velocity
36	What type of quantity is acceleration?	Vector
37	State the equation that links time, change in velocity and acceleration	Acceleration = change in velocity/time
38	What is the unit for acceleration?	m/s2
39	What is the unit for velocity?	m/s
40	What does a horizontal line represent on a velocity-time graph?	Object travelling at constant velocity
41	What does a straight upwards diagonal line represent on a velocity-time graph?	Object travelling at constant acceleration
42	What does a straight downwards diagonal line represent on a velocity-time graph?	Object travelling at constant deceleration
43	What is the resultant force acting on an object obeying Newton's First Law of motion?	0N
44	State the equation that links force, mass and acceleration.	Force = mass x acceleration
45	When an object is moving at terminal velocity, what is the resultant force?	0N
46	How do you calculate the stopping distance of a vehicle?	Thinking distance + braking distance
47	As the speed of a vehicle increases, what happens to the stopping distance?	Stopping distance increases
48	Give 3 factors which affect a drivers reaction time	Tiredness, drugs and alcohol
49	What happens to the braking distance when the road is icy?	Braking distance increases
50	What happens to the braking distance if the car tyres are worn?	Braking distance increases
51	What can large decelerations in a cars speed lead to?	Brakes overheating and/or loss of control of the car

Self-Assess:

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4	What is the force between charged particles called?	
5	What is the force provided by engine and muscles called?	
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16	What is the unit for mass?	
17	What is the name of the force acting on an object due to gravity called?	
18	State the equation that links mass, weight and gravitational field strength	
19	What are the units for gravitational field strength?	
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26	What is the unit for speed?	
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28	What is the typical speed of running?	
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Waves

1	What do all waves transfer?	Energy
2	What are waves caused by?	Vibrations
3	What are the 2 types of waves?	Transverse and longitudinal
4	Sound waves travelling through the air are an example of which type of wave?	Longitudinal
5	Ripples on a water surface are an example of which type of wave?	Transverse
6	Which type of wave has oscillations that move perpendicular to the direction of energy transfer?	Transverse
7	Which type of wave has oscillations that move parallel to the direction of energy transfer?	Longitudinal
8	Which type of wave has compressions and rarefactions?	Longitudinal
9	What is the distance from a point on one wave to the equivalent point on the adjacent wave called?	Wavelength
10	What is the number of waves passing a point each second called?	Frequency
11	State the equation that links frequency, wavelength and wave speed	Wave speed = frequency x wavelength
12	What is the unit for frequency?	Hertz
13	What is the unit for wave period?	seconds
14	What is the unit for wave speed?	m/s
15	What is the unit for wavelength?	m
16	What happens to the wavelength of a wave as its frequency is increased?	The wavelength decreases
17	What is the name of the relationship between the wavelength and the frequency?	Inversely proportional
18	Which type of wave are electromagnetic waves?	Transverse
19	Why are electromagnetic waves able to travel in a vacuum?	As they are vibrations of electric and magnetic fields not particles
20	True or false - electromagnetic waves all travel at the same speed in the same material	True
21	Name the mnemonic which can be used to remember the order of the electromagnetic spectrum	Red men in very unusual X-ray goggles
22	List the order of the electromagnetic spectrum from lowest to highest frequency	Radio, microwaves, infrared, visible, ultraviolet, X ray, gamma
23	Which electromagnetic wave has the shortest wavelength?	Gamma waves
24	Which electromagnetic wave has the longest wavelength?	Radio waves
25	Which electromagnetic wave is visible to the naked eye?	Visible
26	Which type of electromagnetic wave is used for cooking?	Infrared waves
27	Which type of electromagnetic wave is used for medical imaging?	X rays
28	Which type of electromagnetic wave is used for medical treatment such as radiotherapy?	Gamma waves
29	Which type of electromagnetic wave is used for sun tanning?	Ultraviolet waves
30	Which type of electromagnetic wave is used for fibre optic communications?	Visible light

31	Which type of electromagnetic wave causes the skin to age prematurely and increase the risk of skin cancer?	Ultraviolet waves
32	Which 2 types of electromagnetic waves are ionising radiation that can cause cancer?	X rays and gamma rays
33	What type of objects are emitters of infrared radiation?	Hot objects
34	Which type of surface is the best absorber of infrared radiation?	Matt black surfaces
35	Which type of surface is the worst absorber of infrared radiation?	Shiny silver surfaces
36	Which type of surface is the best emitter of radiation?	Matt black surfaces

Self-Assess:

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8	Which type of wave has compressions and rarefactions?	
9	What is the distance from a point on one wave to the equivalent point on the adjacent wave called?	
10	What is the number of waves passing a point each second called?	
11	State the equation that links frequency, wavelength and wave speed	
12	What is the unit for frequency?	
13	What is the unit for wave period?	
14	What is the unit for wave speed?	
15	What is the unit for wavelength?	
16	What happens to the wavelength of a wave as its frequency is increased?	
17	What is the name of the relationship between the wavelength and the frequency?	
18	Which type of wave are electromagnetic waves?	
19	Why are electromagnetic waves able to travel in a vacuum?	
20	True or false - electromagnetic waves all travel at the same speed in the same material	
21	Name the mnemonic which can be used to remember the order of the electromagnetic spectrum	
22	List the order of the electromagnetic spectrum from lowest to highest frequency	
23	Which electromagnetic wave has the shortest wavelength?	
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35	Which type of surface is the worst absorber of infrared radiation?	
36	Which type of surface is the best emitter of radiation?	

Electromagnetism

1	Give 3 elements which are magnetic.	Iron, nickel and cobalt
2	Give 1 alloy which is magnetic	Steel
3	How are the magnetic fields of the atoms arranged in a normal piece of iron?	Magnetic fields are arranged randomly
4	How are the magnetic fields of the atoms arranged in a bar magnet?	Magnetic fiellds are aligned and so the magnetic field is much stronger
5	What do we call the strongest parts of the magnetic field of a bar magnet?	North and South poles
6	Which type of force is the magnetic force?	Non-contact
7	True or false - two like poles will repel each other.	True
8	Which type of magnet produces its own magnetic field?	Permanent
9	What is a material that becomes a magnet when it is placed in a magnetic field called?	Induced magnet
10	In which direction do magnetic field lines point?	North to South
11	Why does the Earth have a magnetic field?	As the core is mostly made of iron which is magnetic
12	What is the name given to a coil of wire with electricity flowing through it?	A solenoid
13	Describe the magnetic field inside a solenoid.	Strong and uniform
14	What happens to the magnetic field when the current changes direction?	Magnetic field changes direction
15	Describe 3 ways to increase the strength of the magnetic field of a solenoid.	Increase the current in the coil, increase the number of coils and use a thicker wire
16	A solenoid with an iron core is called what?	An electromagnet

Self-Assess:

1	Give 3 elements which are magnetic.	
2	Give 1 alloy which is magnetic	
3	How are the magnetic fields of the atoms arranged in a normal piece of iron?	
4	How are the magnetic fields of the atoms arranged in a bar magnet?	
5	What do we call the strongest parts of the magnetic field of a bar magnet?	
6	Which type of force is the magnetic force?	
7	True or false - two like poles will repel each other.	
8	Which type of magnet produces its own magnetic field?	
9	What is a material that becomes a magnet when it is placed in a magnetic field called?	
10	In which direction do magnetic field lines point?	
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