

**Biology (triple only paper 2)** facts to learn for GCSE. Remember paper 2 will have questions on topics 1,6,7,8,9.

Get someone to ask you these questions until you get all the answers right. **Questions in bold are for the Higher Paper only.**

Topic 1 (can be tested on Paper 1 and Paper 2)

Q	Topic 1 Questions	Q	Topic 1 answers
1	What does Benedict's reagent test for?	1	Reducing sugars
2	What is a positive result for a reducing sugar using the Benedict's test?	2	Green, yellow, orange or brick red precipitate
3	What must be done after the Benedict's reagent is added before the test will work?	3	Heat the Benedict's reagent with the sugar solution.
4	What is added to a food to test for protein?	4	Biuret reagent (or potassium hydroxide and copper sulfate)
5	What is a positive result for protein?	5	Colour change from blue to purple.
6	How do you test for starch?	6	Add iodine
7	What is a positive result for starch with iodine?	7	A blue black colour.
8	Describe the emulsion test for fat.	8	Dissolve fat in ethanol, then tip ethanol into water and a white emulsion forms.
9	Describe how a calorimeter is used to measure the energy content of food.	9	Burn the food to heat water and measure the temperature change of the water.

Topic 6 (Triple only and Paper 2 only)

Q	Topic 6 Questions	Q	Topic 6 Answers
1	Why does a leaf have a layer of palisade cells near the top surface?	1	Palisade cells have many chloroplasts that absorb light for photosynthesis. Being at the top surface is nearer to the light.
2	Why is a leaf flat?	2	To minimise the distance that oxygen and carbon dioxide gases have to diffuse
3	Why does a leaf have many stomata?	3	For efficient gas exchange.
4	Why would the leaf cuticle be thicker in a plant that lives in dry places?	4	Prevents loss of water through the leaf surface.
5	How do small spikey leaves help a cactus to survive in a dry environment?	5	Less water loss by transpiration from smaller leaves
6	What is phototropism?	6	A growth response of a plant to light
7	What is gravitropism?	7	A growth response of a plant to gravity
8	Which plant hormone is involved in phototropism and gravitropism?	8	Auxin
9	How does auxin make a plant grow towards light?	9	It causes cells on the shady side of a plant to elongate more than cells on the light side.
<b>10</b>	<b>What are commercial uses of auxins?</b>	<b>10</b>	<b>Rooting powders and weedkillers</b>
<b>11</b>	<b>What are commercial uses of gibberellins?</b>	<b>11</b>	<b>Cause seeds to germinate, flowers and fruit to form and used to make seedless fruits.</b>
<b>12</b>	<b>What is the commercial use of ethene gas?</b>	<b>12</b>	<b>To ripen fruit</b>

Topic 7 (Triple only and Paper 2 only)

Q	Topic 7 Questions	Q	Topic 7 Answers
1	Define the term thermoregulation	1	Keeping body temperature constant
2	Why is thermoregulation important?	2	To keep enzymes at their optimum temperature in the body.
3	In which part of the skin are the receptors that detect changes in temperature in the surroundings?	3	Dermis
4	Which part of the brain detects temperature changes in the blood and receives impulses from the temperature receptors in the skin?	4	Hypothalamus
5	State three responses of the body if the hypothalamus detects that the blood temperature is too high.	5	Sweating, erector muscles relax causing hairs to lie flat, blood vessels bringing blood to the skin capillaries widen (dilate) so more blood flows to the skin surface.
6	Why do we sweat?	6	To cool down by using heat energy to evaporate the water in the sweat therefore transferring heat energy to the surrounding air.
7	What is the surface layer of the skin called where sweat accumulates?	7	epidermis
8	If the erector muscle contracts the hairs stand upright. Explain why this helps to keep us warm.	8	Upright hairs trap a layer of air that acts as an insulator.
9	In addition to upright hairs, constricted blood vessels and lack of sweat on the epidermis, how else do we keep warm?	9	Shivering
10	<b>What is the difference between vasodilation and vasoconstriction?</b>	10	<b>Vasodilation is widening of the blood vessels whereas vasoconstriction is narrowing of the blood vessels.</b>
11	Define the term osmoregulation	11	Keeping water concentration constant in the blood
12	Why is osmoregulation important?	12	So there is no net movement of water in or out of cells by osmosis
13	Which main organ is involved in osmoregulation?	13	Kidney
14	In which organ system is the kidney?	14	Urinary system
15	Name another organ in the urinary system	15	Bladder
16	Where is urine made?	16	Kidney (not the bladder, it is only stored in the bladder)
17	What is the name of the microscopic tubules in the kidney?	17	nephron
18	What process happens between the glomerulus and the Bowman's capsule?	18	Filtration
19	What filters from the blood to the Bowman's capsule and what is left behind in the blood?	19	Water, glucose, amino acids and urea filter through but large proteins and blood cells stay in the blood.
20	What process happens in the convoluted tubule?	20	Selective reabsorption

21	Which substances are selectively reabsorbed back into the blood from the nephron?	21	Glucose and amino acids
22	No glucose is usually left in the nephron so there is no glucose in the urine. If glucose is present in the urine, what condition might this indicate?	22	Diabetes
23	What happens in the Loop of Henle and the collecting duct of the nephron?	23	Water is reabsorbed back into the blood.
24	<b>Which hormone increases the permeability of the collecting to water so that more water is reabsorbed into the blood to prevent dehydration?</b>	24	<b>ADH (Anti diuretic hormone)</b>
25	Which part of the brain detects a low blood water level?	25	Hypothalamus
26	What is the main disadvantage of using a donated kidney to treat kidney failure?	26	Might get rejected
27	State a second way that kidney failure can be treated	27	Dialysis
28	Which organ makes the waste product urea?	28	Liver
29	How does urea get to the kidney?	29	Dissolved in the blood plasma

Topic 8 (Triple only and Paper 2 only)

Q	Topic 8 Questions	Q	Topic 8 Answers
1	State the three factors in Fick's Law that affect the rate of diffusion	1	Surface area, concentration gradient and thickness of membrane.
2	What is the concentration gradient across a cell membrane?	2	The difference between the concentrations on either side of the cell membrane
3	State Fick's Law.	3	Rate of diffusion is proportional to the surface area multiplied by the concentration difference and then divided by the thickness of the membrane
4	How does increase in surface area affect the rate of diffusion?	4	Increases the rate
5	How does increase in concentration difference affect the rate of diffusion?	5	Increases the rate
6	How does increase in thickness of membrane affect the rate of diffusion?	6	Decreases the rate

Topic 9 (Triple only and Paper 2 only)

Q	Topic 9 Questions	Q	Topic 9 Answers
1	What is the source of energy for all food chains?	1	Light energy from the sun
2	How is light energy transferred to chemical energy of chemical?	2	By photosynthesis
3	Why are plants known as producers in the food chain?	3	They produce the biomass for the food chain
4	At which trophic level in a food chain are the primary consumers?	4	The second trophic level
5	Why is some energy lost from a food chain?	5	As heat from respiration (eg. movement and as biomass in waste materials (eg. faeces)
6	What energy is not lost from a food chain?	6	Energy used for growth (because it is transferred to new biomass which can be eaten and passed on in the food chain)
7	Does energy flow through biotic or abiotic components of a food chain?	7	Biotic
8	What does a Sankey diagram show?	8	The energy transfers in an organism
9	Why is a pyramid of biomass always pyramid shaped in an ecosystem?	9	Biomass is lost at each trophic level/stage of the food chain
10	<b>What do we call organisms that can help us monitor pollution levels?</b>	10	<b>Indicator species</b>
11	<b>State two organisms that can indicate polluted water</b>	11	<b>Blood worms and sludge worms</b>
12	<b>State two indicator species that can detect less polluted water</b>	12	<b>Freshwater shrimps and stonefly</b>
13	<b>State two indicator species that can indicate air pollution</b>	13	<b>Lichens and blackspot fungus (on roses)</b>
14	<b>Explain how black spot fungus indicates air quality.</b>	14	<b>Black spot fungus only grows in air where there is no sulfur dioxide pollution.</b>
15	What is the main cause of pollution and need for assessing level of food security?	15	The rapidly increasing human population
16	Why is increased meat consumption not good for food security?	16	Not energy efficient to farm animals for meat, farming crops is more energy efficient.
17	Why does using land to grow biofuels affect food security?	17	Less land available to grow crops for food
18	Why does the appearance of new pests decrease food security?	18	Pests eat the crops so the yield is lower
19	Why does the appearance of new pathogens decrease food security?	19	Pathogens cause disease in crops so the yield is lower.
20	State three factors that affect the rate of decay.	20	Temperature, oxygen availability and water content.
21	Why do warmer temperatures increase the rate of decay?	21	Enzymes in micro-organisms are nearer their optimum temperature.
22	Why does more oxygen availability increase rate of decay?	22	More aerobic respiration in micro-organisms
23	How does food preservation work?	23	Use conditions that decrease rate of decay
24	How can composting be improved?	24	Use conditions that increase rate of decay