AQA GCSE Topic 2 Organisation: Tissues, Organs & Organ Systems Key Words

Key Word	Definition
Cells	The basic building blocks that make up all organisms (living things)
Specialised cells	Cells that carry out a particular function e.g. muscle cells, nerve cells, root hair cells
Differentiation	The process by which cells become specialised for a particular function
Tissues	A tissue is a group of SIMILAR cells that work together to carry out a particular function. E.g. muscle tissue (can contract), glandular tissue (secretes enzymes or hormones), epithelial tissue (covers some organs)
Organs	An organ is a group of DIFFERENT tissues that work together to perform a particular function. E.g. the stomach is made up of muscle, glandular and epithelial tissues
Organ systems	An organ system is a group of organs working together to perform a particular function e.g. the digestive system, the circulatory system, the reproductive system
Multicellular organisms	Organisms made of many cells e.g. animals and plants. They have organ systems inside them for exchanging and transporting materials
Lungs	You need to get oxygen from the air into your blood stream (so oxygen can get to the cells for respiration) and you need to get rid of carbon dioxide (produced during respiration) from the blood stream into the air. For this, air is forced into and out of your lungs by breathing
Structure of the lungs	The lungs are found within the thorax (the top part of the body, separated from the lower part by a sheet of muscle called the diaphragm). The lungs are protected by the rib cage and are surrounded by the pleural membranes. Air goes into the trachea, which splits into 2 bronchi, which splits into smaller tubes called bronchioles, which end at air sacs called alveoli
Gas exchange	Diffusion of oxygen from the alveoli into the capillaries and the diffusion of carbon dioxide from the capillaries into the alveoli
Circulatory system	It includes the heart, the blood vessels and the blood. It's job is to get glucose and oxygen to every

	cell of the body (for respiration) and to carry waste products (carbon dioxide and urea) to where they can be removed from the body
Double circulatory system	Humans have a double circulatory system. Blood is first pumped from the heart to the lungs to collect oxygen. Blood then returns to the heart to be pumped around the body. Blood therefore needs to enter the heart twice (so a double circulatory system)
Structure of the heart	The heart walls are mainly made of muscle tissue. The heart has 4 chambers (right atrium, right ventricle, left atrium and left ventricle) and 4 blood vessels (vena cava, pulmonary artery, aorta and pulmonary vein). The heart also contains valves to prevent backflow of blood. The heart has its own blood supply too from the coronary arteries
Pacemaker	Resting heart rate is controlled by a group of cells in the right atrium wall, which produce a small electrical impulse causing the heart muscle cells to contract. Artificial pacemakers can be used to keep your heart beating regularly
Arteries	Blood vessels which carry blood away from the heart towards the organs. Blood is pumped at high pressure so these have thick muscle and elastic fibre walls
Capillaries	Arteries branch into capillaries. They have very thin walls for easy exchange of gases and glucose at the cells
Veins	Capillaries join up to form veins and they carry blood to the heart at lower pressure. Their walls are thinner than arteries and they have valves to prevent backflow of blood
Blood	Blood is a tissue which transports substances around the body. It's made up of red blood cells, white blood cells, platelets and plasma
Red blood cells	These transport oxygen around the body. They are biconcave for a large surface area, they don't have a nucleus so they can contain as much haemoglobin as possible to carry oxygen
Haemoglobin	Haemoglobin found within the red blood cells combines with oxygen to form oxyhaemoglobin in the lungs. The opposite happens in the body tissues so oxygen is released for use by the cells
White blood cells	They defend against pathogens (microbes that

	cause disease). Some engulf pathogens, some produce antibodies and some produce antitoxins
Platelets	Small cell fragments that help the blood to clot at a wound
Plasma	Straw-coloured liquid part of blood. It carries the red and white blood cell, platelets, digested nutrients (e.g. glucose, amino acids), carbon dioxide, urea, hormones, proteins, antibodies and antitoxins
Plant tissues	Plants have tissues too e.g. epidermal tissue (covers the plant), palisade mesophyll tissue (most photosynthesis happens here), spongy mesophyll tissue (big air spaces to allow gases to diffuse), xylem (transports water and dissolved minerals), phloem (transports dissolved sugars) and meristem tissue (where plants grow)
Plant organs	Plants have organs too e.g. stem, roots, leaves
Structure of the leaf	Leaves contain upper and lower epidermal tissue, palisade mesophyll tissue, spongy mesophyll tissue, xylem, phloem, stomata (holes on the underside of the leaf where gases diffuse into and out), guard cells (surround the stomata to control their opening)
Phloem	Tubes that transport dissolved sugars up and down the plant to where the sugars are needed (translocation). The tubes are made of living cells, with small pores in the end walls
Translocation	The movement of dissolved sugars around the plant via the phloem
Xylem	Tubes that carry water and dissolved minerals up the plant from the roots to the leaves where water vapour can leave the leaf through the stomata (transpiration). The tubes are made of dead cells, with no end walls, strengthened with lignin
Transpiration stream	The movement of water from the roots, through the xylem and out of the leaves
Factors affecting transpiration	Increased light intensity, temperature and air flow increase the rate of transpiration. Decreased humidity (dry air surrounding the leaf) increases the rate of transpiration
Potometer	Apparatus used to measure the uptake of water by a plant. This is used to estimate the rate of transpiration
Guard cells	They surround the stomata. When they are kidney bean shaped (when the plant has plenty of water

	and the guard cells are turgid) the stomata are open. When the plant is short of water the guard cells become flaccid which close the stomata and prevents more water loss from the stomata