Name_____

GCSE Homeostasis Booklet Triple

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accommodation	**The ability of the eye to change its focus from distant to near objects (and vice versa).**
ADH	**Antidiuretic hormone (ADH) is a hormone that helps your kidneys manage the amount of water in your body.**
adrenaline	**A natural stimulant made in the adrenal gland of the kidney.**
analyse	**To study or examine something in detail, in order to discover more about it.**
anomalous	**Data are those measurements that fall outside the normal, or expected, range of measured values.**
aorta	**The main artery of the body, supplying oxygenated blood to the circulatory system.**
auxin	**A family of hormones found in plants. Auxins are mostly made in the tips of the shoots and roots, and can diffuse to other parts of the shoots or roots.**
basal metabolic	**The amount of energy required to sustain only vital organs when one is at rest.**
central nervous system	**The part of the nervous system comprising the brain and spinal cord.**
cerebellum	**Structure located in the back of the brain (dorsal to the pons) involved in central regulation of movement, such as basic movement, balance, and posture.**
cerebral cortex	**The cerebrum's (brain) outer layer of neural tissue in humans and other mammals.**
cervix	**The lower, narrow part of the uterus (womb).**
combined contraceptive pill	**Commonly known as the pill, greatly reduces the chances of mature eggs being produced. It contains oestrogen or progesterone (another hormone).**
cooling	**Become or make less hot.**
cornea	**The transparent layer forming the front of the eye.**
deamination	**The process by which amino acids are broken down if there is an excess of protein intake.**
dehydration	**A condition caused by the excessive loss of water from the body, which causes a rise in blood sodium levels.**
diabetes	**A disease in which too little or no insulin is produced or insulin is produced but cannot be used normally resulting in high levels of sugar in the blood.**
dialysis	**The process of separating molecules in solution by the difference in their rates of diffusion through a semipermeable membrane.**
dominant hand	**A better (faster or more precise) performance or individual preference for use of a hand,**
donor	**An individual organism that supplies living tissue to be used in another body.**
effector	**A muscle, a gland, or an organ capable of responding to a stimulus, especially a nerve impulse.**
endocrine gland	**Glands of the endocrine system that secrete their products, hormones, directly into the blood rather than through a duct.**
endocrine system	**Chemically controls the various functions of cells, tissues, and organs through the secretion of hormones by glands.**
endocrine system	**The collection of glands that produce hormones that regulate metabolism, growth and development, tissue function, sexual function, reproduction, sleep, and mood, among other things.**
enzyme	**A substance produced by a living organism which acts as a catalyst to bring about a specific biochemical reaction.**

evaporation	**The changing of a liquid into a gas, often under the influence of heat (as in the boiling of water).**
fertilisation	**The joining or fusion of a male gamete and a female gamete.**
Fertility drug	**Contain FSH and LH, which stimulate eggs to mature in the ovary.**
filtrate	**A liquid which has passed through a filter.**
follicle	**The basic units of female reproductive biology. Each of them contains a single immature ovum or egg cell.**
FSH	**Follicle Stimulating Hormone, which stimulates oestrogen production and the growth of follicles (egg-sacs) in the ovary. It is secreted by the pituitary gland.**
glucagon	**A hormone formed in the pancreas which promotes the breakdown of glycogen to glucose in the liver.**
glycogen	**A substance deposited in bodily tissues as a store of carbohydrates.**
gravitropism	**(also known as geotropism) is a turning or growth movement by a plant or fungus in response to gravity.**
homeostasis	**Keeping things constant and comes from two Greek words: 'homeo,' meaning 'similar,' and 'stasis,' meaning 'stable.'**
hormone	**A chemical substance produced in the body that controls and regulates the activity of certain cells or organs.**
hormone	**Chemical substances produced by body cells and released especially into the blood and having a specific effect on cells or organs of the body usually at a distance from the place of origin.**
implantation	**When the fertilized egg enters the endometriosis, or uterine lining, and burrows into it in order to begin cell division.**
insulin	**A hormone produced in the pancreas which regulates the amount of glucose in the blood.**
ions	**An atom or group of atoms that carries a positive or negative electric charge as a result of having lost or gained one or more electrons.**
iris	**The coloured part around the pupil of the eye in vertebrate animals, located between the cornea and lens.**
IVF	**In vitro fertilization (IVF) is a complex series of procedures used to treat fertility or genetic problems and assist with the conception of a child.**
IVF cycle	**In vitro fertilization (IVF) is a complex series of procedures. During IVF, mature eggs are collected (retrieved) from your ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs are implanted in your uterus. One cycle of IVF takes about two weeks.**
kidney transplant	**This procedure involves implanting a kidney from an organ donor into the patient's body to replace the damaged kidney.**
kidney tubules	**Small tubes running through the kidneys which filter the blood and produce the urine.**
LH	**Luteinizing hormone which causes the mature egg to be released from the ovary.**
magnetic resonance imaging	**A non-invasive imaging technology that produces three dimensional detailed anatomical images without the use of damaging radiation.**
master gland	**Pituitary Gland. Produces hormones that control other glands and many body functions including growth.**

medula	**The lowest part of the brain and the lowest portion of the brainstem.**
meristem	**Includes the growing tips of roots and stems. The originally undifferentiated cells of the meristem can produce specialized cells to form the tissues of roots, leaves, and other plant parts.**
myelin sheath	**A fatty white substance that surrounds the axon of some nerve cells, forming an electrically insulating layer.**
negative feedback	**Negative feedback ensures that, in any control system, changes are reversed and returned back to the set level. For example, negative feedback keeps our body temperature at a constant 37°C.**
nervous system	**The system of nerves in your body that sends messages for controlling movement and feeling between the brain and the other parts of the body.**
neurone	**Specialized cell that conducts nerve impulses: consists of a cell body, axon, and dendrites.**
non-invasive	**Done without cutting the body or putting something into the body.**
oestrogen	**Secreted by the ovaries which stops FSH being produced and stimulates the pituitary gland to release the hormone LH .**
ovulation	**the process by which a mature egg is released from the ovary and travels down a woman's fallopian tube.**
permeability	**The ability of a substance to allow another substance to pass through it.**
phototropism	**The orientation of a plant or other organism in response to light.**
pituitary gland	**A small endocrine gland secreting hormones that regulate growth and metabolism, and is located at the base of the brain.**
plant cuttings	**A branch from the parent plant is cut off, its lower leaves removed and the stem planted in damp compost.**
progesterone	**Hormone secreted by ovaries: it maintains the lining of the uterus and stays high during pregnancy.**
progesterone	**Hormone secreted by ovaries: it maintains the lining of the uterus and stays high during pregnancy.**
progesterone only pill	**Called mini-pills. These pills do not always suppress ovulation, but make the cervical mucus thick and unwelcoming to sperm, preventing entry to the uterus.**
reaction time	**The time that elapses between a stimulus and the response to it.**
receptor	**A specialized cell or group of nerve endings that responds to sensory stimuli.**
reflex action	**An involuntary and nearly instantaneous movement in response to a stimulus.**
reflex arc	**The nerve pathway which makes such a fast, automatic response possible.**
rejection	**When the body's immune system attacks transplanted cells, tissues, or organs.**
relay neurone	**Carry messages from one part of the CNS to another.**
respiration	**A chemical process in which energy is released from food substances, such as glucose.**
retina	**The light-sensitive membrane that lines the inside of the back of the eyeball and connects to the brain by the optic nerve.**
rods	**A type of specialized light-sensitive cell (photoreceptor) in the retina of the eye that provides side vision and the ability to see objects in dim light (night vision).**

secretions	**Production and release of a useful substance by a gland or cell.**
selective reabsorption	**The re-entry of a specific material into body tissue to avoid a deficiency within the body of that material.**
Selective weed-killer	**Kill some plants but not others. Contains growth hormone that causes the weeds to grow too quickly. The weed-killer is absorbed in larger quantities by the weeds than the beneficial plants.**
Stem cells	**Undifferentiated biological cells that can differentiate into specialized cells and can divide to produce more stem cells.**
synapse	**The junction across which a nerve impulse passes from an axon terminal to a neuron, muscle cell, or gland cell.**
synthesised	**The production of an organic compound in a living thing, especially as aided by enzymes.**
target organ	**A tissue or organ on which a hormone exerts its action; generally, a tissue or organ with appropriate receptors for a hormone.**
testosterone	**Hormone produced by testes. Controls puberty in males.**
thermoregulatory centre	**A part of the brain which monitors and controls body temperature.**
thyroxine	**Hormone produced by the thyroid glands to regulate metabolism by controlling the rate of oxidation in cells.**
Tissue culture	**The growth of tissues or cells separate from the organism.**
tropism	**A growth in response to a stimulus.**
urea	**A water-soluble compound that is the major product of protein metabolism and is the chief nitrogenous component of the urine .**
valid	**Data are only valid if the measurements that have been made are affected by a single independent variable only.**
vasoconstriction	**Narrowing of the blood vessels that results from contraction of the muscular walls of the vessels.**
vasodilation	**Widening of blood vessels that results from relaxation of the muscular walls of the vessels.**
voluntary action	**An action which you yourself initiate by your own conscious i.e. think about.**

Homeostasis – Keeping internal condition in balance

Control systems

All control systems in the body, whether nervous or endocrine, have the same pattern.

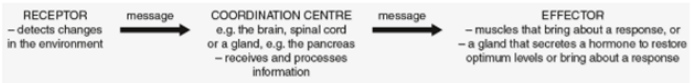


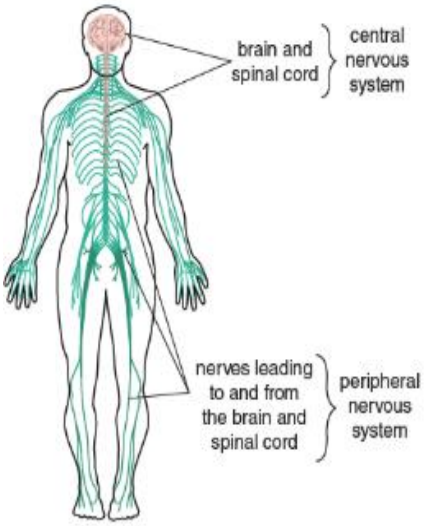
Figure 5.3 The components of the body systems that are responsible for homeostasis

The nervous system and endocrine system are different in nature but, in practice, the two systems interact with and regulate each other.

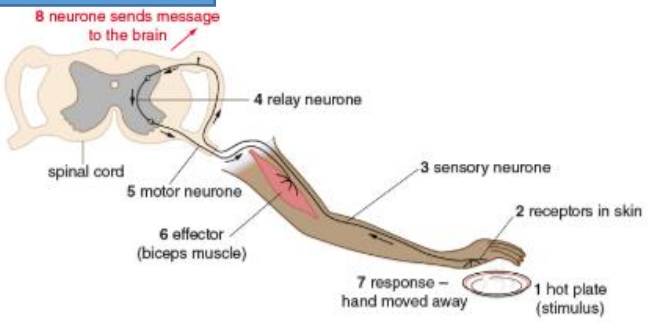
	Nervous system	Endocrine system
response	rapid and short duration	slower but acts for longer
nature of message	nerve impulse – electrical	a **hormone** – chemical
action	carried in nerves to specific location, e.g. muscle	carried in blood to all organs, but affects the **target organ** only

The nervous and endocrine systems compared

Nervous system



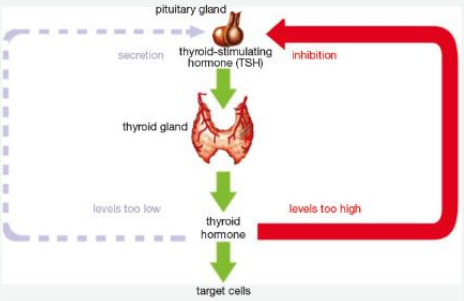
Reflex arc



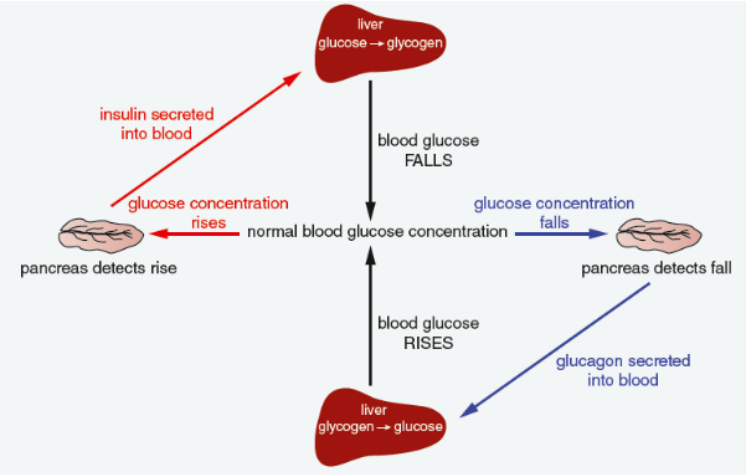
Control of thyroxine secretion

The **pituitary gland** controls secretions from other glands. One such gland is the thyroid gland.

Levels of thyroxine in the blood are increased when the pituitary gland secretes thyroid-stimulating hormone (TSH). The thyroid gland responds by secreting thyroxine. If levels of thyroxine become too high, TSH secretion is blocked.



Control of blood glucose concentration



Human endocrine system