Section 1 - Homeostasis

Key Term	Definition
Homeostasis	Regulation of internal conditions to maintain optimal conditions for enzyme action and cell function.
Blood Glucose Concentration	The amount of sugar in the blood.
Automatic Control System	The body using a nervous or chemical response to regulate the conditions in the body.
Receptors	Cells that detect a stimuli.
Stimuli	A change in the external environment.
Coordination Centre	Areas that receive and process information from receptors.
Effector	Muscles or glands that bring about responses in the body.
Gland	Part of the body that releases hormones.

The body balances:

- Blood glucose concentration
- Body temperature
- Water levels.

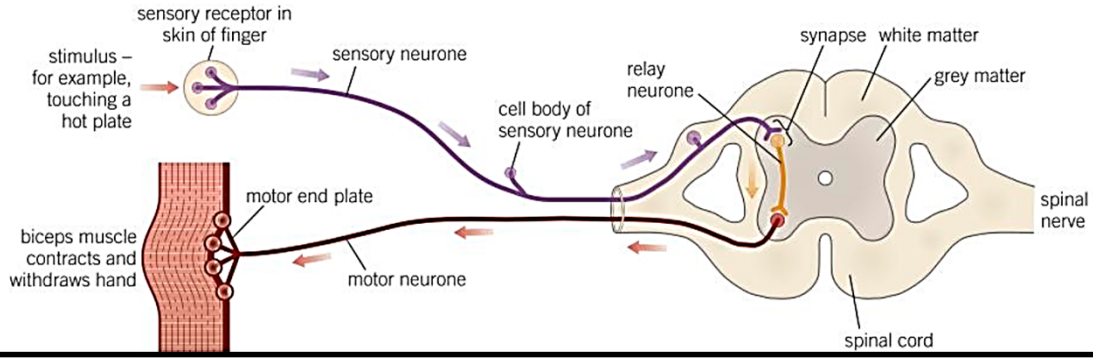
Section 2 – Nervous System Definitions

Key Term	Definition
Neurones	Basic cells of the nervous system that carry electrical impulses
CNS	Central nervous system. The brain and the spinal cord
Reflex Arc	Bring about a reflex action
Coordinator	Areas that receive and process information from receptors
Sensory Neurone	Carries impulses from the sensory organs to the CNS
Relay Neurone	Neurone between the sensory and motor neurone in a reflex arc
Motor Neurone	Carries impulses from the central nervous system to the effector organ
Synapse	

Normal pathway for action:
Stimulus → Receptor → Coordinator (CNS) → Effector

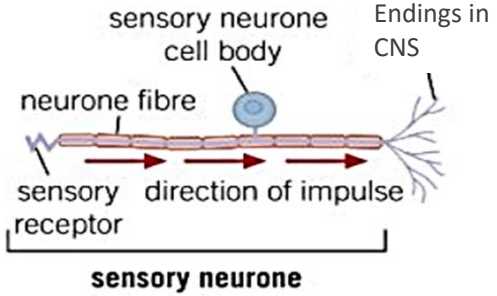
Section 3 Reflexes – Nervous System Definitions

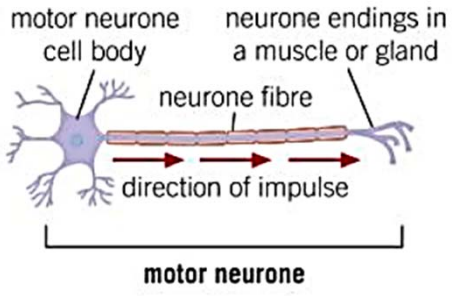
Reflex Action: Rapid automatic responses of the nervous system that happen without conscious thought
Stimulus → Receptor → Sensory Neurone → Relay Neurone in Spinal Cord→ Motor Neurone → Effector



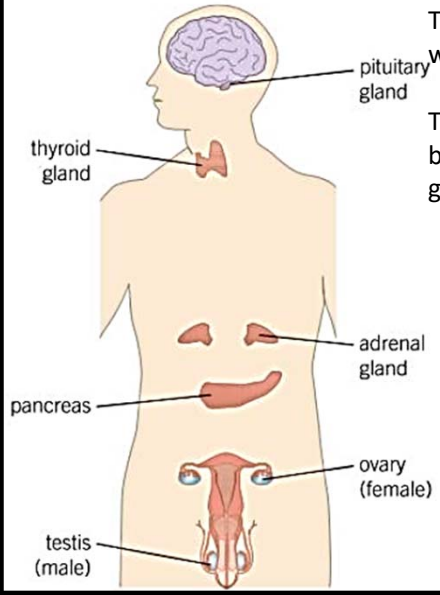
<u>Required Practical Reaction Time</u>:
Reaction times -

1. Use your weaker hand for this experiment..
2. Sit down on the chair with good upright posture and eyes looking across the room.
3. Place the forearm across the table
4. Your partner will hold the ruler so the zero mark is level with the top of your thumb
5. Your partner will then drop the ruler **without** telling you.
6. You must catch the ruler as quickly as you can when you sense that the ruler is dropping.
7. After catching the ruler, look at the number level with the top of your thumb.
8. Record this in a table such as the one here.





Section 4 - Endocrine



The endocrine system is composed of glands which secrete hormones into the blood stream.

The pituitary gland is a 'master gland' in the brain releasing hormones which act on other glands to secrete several hormones.

Section 5 – Blood Glucose Concentration

Blood glucose is too high → Pancreas releases insulin → Glucose is taken up by cells → Glucose is converted to glycogen in the liver → Normal blood glucose levels

Diabetes Type	What happens?	Treatment Plan	Risk Factors
Type 1	The pancreas fails to produce sufficient insulin	Insulin injections	Genetic
Type 2	The cells in the body no longer respond to insulin	Controlled diet and exercise	Obesity, smoking

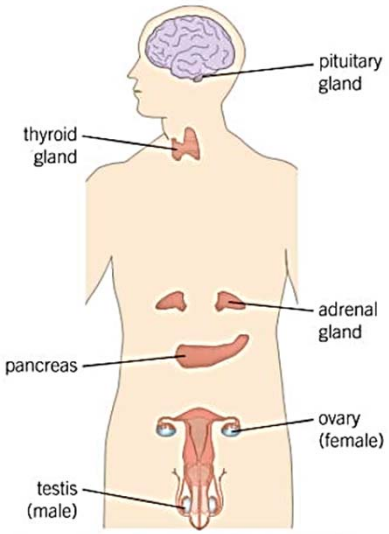
Section 6 – Reproduction Hormones

Hormone	M/F?	What does the hormone do?	Gland?
Oestrogen	Female	Causes eggs to mature and ovulation to occur	Ovary
Testosterone	Male	Stimulates sperm production	Testis
FSH	Female	Follicle Stimulating Hormone, causes eggs to mature in the ovary	Pituitary
LH	Female	Luteinising Hormone, stimulates the release of the egg	Pituitary
Progesterone	Female	Maintains the uterus lining	Ovary

Section 7 Contraception

Contraceptive	What is it?	Advantages	Disadvantages
Combined Pill	Contains oestrogen and progesterone. Oestrogen inhibits the release of FSH so no eggs mature. Progesterone helps effectiveness (See below)	Effective Easy to use	Can be forgotten, Side effects such as raising blood pressure, thrombosis and breast cancer.
Progesterone Only Pill	Progesterone prevents the egg maturing and being released. Thickens cervical mucus and stops build up of uterus lining	Long lasting, Effective	Can effect the whole body
Injection, Implant, Skin Patch	Slowly-release progesterone into the blood stream.	Long lasting, Effective	Can effect the whole body
Barrier Methods e.g. condoms, diaphragm	Physically prevent the sperm from reaching the egg	No side effects, Condoms prevent STDs and STIs	Can often be used incorrectly which lowers effectiveness
Intrauterine Device	A device in the uterus which releases progesterone	Can last up to 5 years	Can effect periods, Risk of infection
Copper Coil	A device in the uterus which kills sperm and stops embryos implanting in the uterus	Can last up to 5 years	Can effect periods, Risk of infection
Spermicidal Agents	Kills or disables sperm so it cannot reach the egg	Easy to use	Not very effective
Surgical Methods	Using surgery to cut and tie the male sperm duct (a vasectomy) or the female oviduct.	Permanent, Very effective, No risk of human error	Hard/impossible to undo, Surgery
Calendar Method	Abstaining from sexual intercourse when an egg could be in the oviduct	Accepted by religions No side effects	Unreliable

Section 4 - Endocrine



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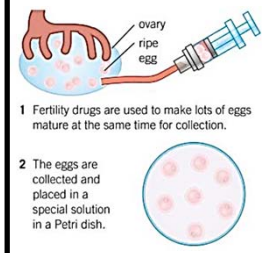
Section 5 – Blood Glucose Concentration

Blood glucose is too high → Pancreas releases insulin → Glucose is taken up by cells → Glucose is converted to glycogen in the liver → Normal blood glucose levels ← Amino acids/fats are broken down → Glycogen is broken down to glucose → Pancreas releases glucagon → Blood glucose is too low → Blood glucose is too high

This is the example of a negative feedback cycle, using insulin and glucagon to control blood glucose levels.

Diabetes Type	What happens?	Treatment Plan	Risk Factors
Type 1	The pancreas fails to produce sufficient insulin	Insulin injections	Genetic
Type 2	The cells in the body no longer respond to insulin	Controlled diet and exercise	Obesity, smoking

Section 8 Treating Infertility



In Vitro Fertilisation (IVF) – Removing healthy eggs, fertilising them outside of the body and then re-implanting them into the body.
FSH – Injecting FSH to stimulate the release of an egg.

Section 6– Reproduction

Hormone	M/F?	What does the hormone do?	Gland?
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Testosterone	Male	Stimulates sperm production	Testis
FSH	Female	Follicle Stimulating Hormone, causes eggs to mature in the ovary	Pituitary
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Progesterone	Female	Maintains the uterus lining	Ovary

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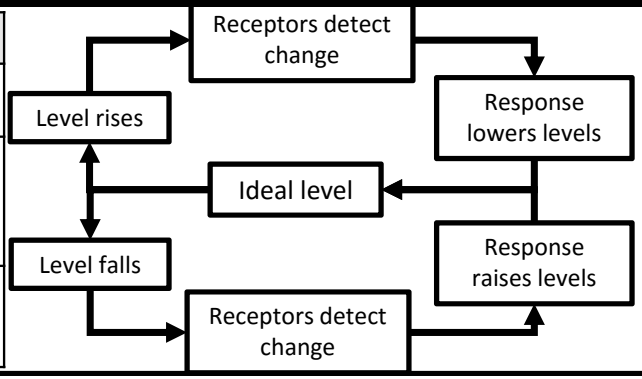
Combined Pill	Contains oestrogen and progesterone. Oestrogen inhibits the release of FSH so no eggs mature. (see below for progesterone)	Effective Easy to use	Can be forgotten, Side effects
Progesterone Only Pill	Including the pill, injection, implant and skin patch. Progesterone prevents the egg maturing and being released. Thickens cervical mucus and stops build up of uterus lining	Long lasting, Effective	Can effect the whole body
Barrier Methods	E.g. condoms, diaphragm. Physically prevent the sperm from reaching the egg	Can prevent STDs and STIs	Can often be used incorrectly
Intrauterine Device	A device in the uterus which releases progesterone	Can last up to 5 years	Can effect periods, Risk of infection
Spermicide	Kills or disables sperm so it cannot reach the egg.	Easy to use	Not very effective
Surgical Methods	Using surgery to cut and tie the male sperm duct (a vasectomy) or the female oviduct.	Permanent, Very effective	Hard to undo, Surgery
Calendar Method	Abstaining from sexual intercourse when an egg could be in the oviduct	Accepted by religions	Unreliable

Section 9 Negative Feedback Loop

	Thyroxine	Adrenaline
Use	Growth and Development	Fight or Flight reflex
To increase	Pituitary gland produces thyroid stimulating hormone	Adrenal gland releases adrenaline
To decrease	Thyroid gland produces thyroxine	Adrenaline stops being produced



For higher tier they should know the interactions of different hormones throughout menstruation. It didn't fit on the matt.