Unit 2 Key terms and definitions

1. Gamete Production and Fertilisation

- **Testes:** Male reproductive organs that produce sperm and testosterone.
- **Seminiferous Tubules:** Structures in the testes where sperm is produced.
- **Interstitial Cells:** Cells in the testes that produce testosterone.
- **Prostate Gland:** A gland in males that secretes fluid to maintain sperm mobility.
- **Seminal Vesicles:** Glands that produce seminal fluid, helping sperm viability.
- **Ovaries:** Female reproductive organs that contain immature ova and secrete hormones.
- **Follicle:** A structure surrounding each ovum that protects it and secretes hormones.
- **Ovum (plural: Ova):** A mature female egg cell.
- **Oviduct (Fallopian Tube):** The tube through which an ovum travels from the ovary, where fertilisation may occur.
- **Zygote:** The cell formed by the fusion of sperm and egg during fertilisation.

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2. Hormonal Control of Reproduction

- **Hypothalamus:** Part of the brain that stimulates the pituitary gland to release reproductive hormones.
- **Follicle Stimulating Hormone (FSH):** A hormone that promotes sperm production in males and stimulates follicle development in females.
- **Luteinising Hormone (LH):** A hormone that triggers ovulation in females and supports reproductive function in both genders.
- **Interstitial Cell Stimulating Hormone (ICSH):** A hormone that stimulates testosterone production in males.
- **Testosterone:** A male sex hormone that stimulates sperm production and activates male reproductive glands.
- **Menstrual Cycle:** A roughly 28-day cycle in females that prepares the body for potential pregnancy.
- **Ovulation:** The release of a mature egg from the ovary, typically around the midpoint of the menstrual cycle.
- **Corpus Luteum:** A structure formed from the follicle after ovulation, which secretes progesterone.
- **Progesterone:** A hormone that promotes the development of the endometrium, preparing it for possible implantation.
- **Negative Feedback:** A control mechanism where hormone levels regulate the production and release of other hormones.

3. The Biology of Controlling Fertility

- **Cyclical Fertility:** Refers to the fact that women are only fertile during certain days of the menstrual cycle.
- **Continuous Fertility:** Refers to the fact that men produce sperm continuously throughout their reproductive lives.
- **Ovulatory Drugs:** Medications that stimulate ovulation by either preventing negative feedback or mimicking FSH and LH.
- **Artificial Insemination:** A fertility treatment where sperm is collected and directly introduced into the female reproductive system.
- **Intra-cytoplasmic Sperm Injection (ICSI):** A procedure where a single sperm is injected directly into an egg.
- **In Vitro Fertilisation (IVF):** A process where eggs are fertilised outside the body and then implanted into the uterus.
- **Pre-implantation Genetic Diagnosis (PGD):** A technique used in conjunction with IVF to screen embryos for genetic disorders before implantation.
- **Oral Contraceptive Pill:** A chemical method of contraception that uses synthetic hormones to prevent ovulation.
- **Intra-uterine Device (IUD):** A physical method of contraception that prevents sperm from fertilising the egg or prevents implantation.

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4. Antenatal and Postnatal Screening

- **Antenatal Screening:** Tests performed during pregnancy to assess the health of the mother and fetus.
- **Ultrasound Scans:** Imaging techniques used to monitor fetal development, including dating and anomaly scans.
- **Dating Scan:** An ultrasound scan to determine the stage of pregnancy and due date, performed between 8 and 14 weeks.
- **Anomaly Scan:** An ultrasound scan to check for physical abnormalities in the fetus, performed between 18 and 20 weeks.
- **Amniocentesis:** A diagnostic test where amniotic fluid is sampled to check for genetic abnormalities.
- **Chorionic Villus Sampling (CVS):** A prenatal test that samples placental tissue to diagnose chromosomal abnormalities, done earlier than amniocentesis.
- **Karyotype:** A visual representation of an individual's chromosomes, used to diagnose genetic disorders.
- **Phenylketonuria (PKU):** A genetic disorder where the enzyme required to convert phenylalanine to tyrosine is non-functional.

5. The Structure and Function of Arteries, Capillaries, and Veins

- **Arteries:** Blood vessels that carry oxygenated blood away from the heart to the body.
- **Capillaries:** Tiny blood vessels that allow the exchange of substances between blood and tissues.
- **Veins:** Blood vessels that carry deoxygenated blood back to the heart, equipped with valves to prevent backflow.
- **Vasoconstriction:** The narrowing of blood vessels due to contraction of the smooth muscle, reducing blood flow.
- **Vasodilation:** The widening of blood vessels due to relaxation of smooth muscle, increasing blood flow.
- **Tissue Fluid:** The fluid that surrounds cells, allowing for the exchange of nutrients and waste products.
- **Lymphatic Vessels:** Vessels that absorb excess tissue fluid and return it as lymph to the circulatory system.
- **Pressure Filtration:** The process by which plasma is forced out of capillaries into the tissue fluid surrounding cells.

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6. The Structure and Function of the Heart

- **Cardiac Output:** The volume of blood pumped by each ventricle per minute (calculated as heart rate multiplied by stroke volume).
- **Sino-atrial Node (SAN):** The heart's natural pacemaker, responsible for initiating the heartbeat.
- **Atrial Systole:** The contraction of the atria that pushes blood into the ventricles.
- **Ventricular Systole:** The contraction of the ventricles that pumps blood out of the heart to the lungs and body.
- **Electrocardiogram (ECG):** A recording of the electrical activity of the heart, used to monitor heart function.
- **Systolic Pressure:** The pressure in the arteries during the contraction of the heart (ventricular systole).
- **Diastolic Pressure:** The pressure in the arteries when the heart is relaxed (during diastole).
- **Hypertension:** A condition of abnormally high blood pressure, a risk factor for cardiovascular disease.

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7. Pathology of Cardiovascular Disease (CVD)

- **Atherosclerosis:** The build-up of fatty material (atheroma) in the walls of arteries, leading to narrowing and increased blood pressure.
- **Thrombosis:** The formation of a blood clot (thrombus) inside a blood vessel.
- **Embolus:** A blood clot that breaks free and travels through the bloodstream, potentially causing blockages.
- **Myocardial Infarction (Heart Attack):** The death of heart muscle tissue due to a blocked coronary artery.
- **Stroke:** The death of brain tissue due to a lack of oxygen, often caused by a blood clot in an artery leading to the brain.
- **Peripheral Vascular Disease:** A condition where blood flow is restricted in arteries other than those of the heart or brain, typically affecting the legs.
- **Cholesterol:** A type of lipid found in the cell membranes and used to produce sex hormones.
- **High-Density Lipoprotein (HDL):** "Good" cholesterol that transports excess cholesterol from the body to the liver for elimination.
- **Low-Density Lipoprotein (LDL):** "Bad" cholesterol that transports cholesterol to cells and can contribute to atherosclerosis.

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8. Blood Glucose Levels and Obesity

- **Insulin:** A hormone produced by the pancreas that lowers blood glucose levels by promoting the conversion of glucose to glycogen.
- **Glucagon:** A hormone produced by the pancreas that raises blood glucose levels by stimulating the conversion of glycogen to glucose in the liver.
- **Adrenaline:** A hormone released during stress that increases blood glucose levels by stimulating glucagon secretion and inhibiting insulin.
- **Type 1 Diabetes:** A condition where the body cannot produce insulin, often requiring insulin injections.
- **Type 2 Diabetes:** A condition where the body's cells become less sensitive to insulin, often associated with obesity.
- **Glucose Tolerance Test:** A test used to diagnose diabetes by measuring how quickly blood glucose levels return to normal after consuming glucose.
- **Obesity:** A condition characterised by excess body fat, linked to an increased risk of cardiovascular disease and type 2 diabetes.
- **Body Mass Index (BMI):** A measure of body fat based on weight and height; a BMI over 30 indicates obesity.