BTEC National Health & Social Care (AAQ) Revision Guide – Answers

*****

The practice questions, marks and answers included in this book are the authors' own work. They have not been checked or approved by the awarding organisation. They are designed to help learners develop knowledge, skills and understanding but they do not replicate real examination papers, assessments or mark schemes.

For definitive advice and details about assessment please refer to the awarding organisation website.

*****

Unit 1

Recap questions – page 8

1. Use of the **pincer grip, holding a spoon or small object**.
2. **Bowlby** believes in the critical period.
3. **Early childhood** sees the development of important friendships, typically around the **age of 7.**
4. In early childhood an additional stage of play is **co-operative play** as children begin to learn to share with other children.
5. A) **testosterone** B) **Oestrogen and progesterone**
6. Self-esteem refers to the **amount of value and confidence we have in our self**.
7. **Peer pressure and independence** are examples of social development in adolescence.
8. **Mary Ainsworth** studied the strange situation.
9. Ability to **recognise familiar faces** and **development of language such as babbling** are examples of intellectual development in infancy.
10. A primary sexual characteristic is **sperm production in males** and a secondary sexual characteristic is **breast buds developing in females**.

Revision quiz – page 8

1. Health conditions such as **arteriosclerosis and reduced mobility** can be common physical developments in late adulthood.
2. A risk factor for breast cancer is being a carrier of the **BRCA1 or BRCA2 gene**, another risk factor includes **obesity**.
3. The lifestyle factors of **smoking and alcohol consumption** can impact a pregnancy.

4. A person's job may affect their health because it could raise certain mental health challenges such as **stress or anxiety** or pose physical health risks, such as some manual labour jobs leading to **spinal issues** later in life.
5. **Conjunctivitis and ear infections** can be common health conditions in early childhood.
6. One professional that works within a hospital is an **adult nurse**; their role is to support patient recovery through regular monitoring and assessment of patients whilst an in-patient. Another professional that works within a hospital is a **radiographer**; their role is to take and interpret medical images such as those from an x-ray.

Recap questions – page 13

1. The age range of late adulthood is **70-84 years**.
2. **Social disengagement theory** believes individuals naturally withdraw from society.
3. An example of emotional development in early adulthood is the **changes to an individual's self-concept.**
4. Skin loses elasticity in later adulthood because of a lack of proteins such as **collagen and elastin**.
5. The term cognitive super agers mean an individual is **showing no signs of cognitive decline** in later adulthood, this typically occurs because an individual has a positive lifestyle and good brain structure.
6. The perimenopause is experienced in the life stage of **middle adulthood**.

Assessment practice – page 13

1. Under arm hair (1)
2. Menstrual cycle begins, breast buds develop, pubic hair. (1 mark per answer)
3. Abstract thinking refers to being able to think outside of the box about concepts that are not visible such as time. (1)
4. Crawling. (1)
5. Ainsworth's attachment types theory. (1)
6. Self-esteem refers to how much an individual values themselves through self-worth and confidence. (1)
7. Bone density declines and deterioration of vision. (2)
8. Adolescence (9-18 years) and early childhood (3-8 years) (2)
9. Abstract thinking becomes more refined. (1)
10. Peer pressure can influence physical development in adolescence by causing an increase in weight gain. (1) This is because peers may pressure adolescents into negative lifestyle choices such as consuming high amount of junk food or not exercising. (1) Another impact on physical development is risk of overdose.

(1) This is because peers may negatively influence an individual into drug use that may have serious health consequences. (1)

11. One way to improve intellectual development in early childhood is through modelling (1). This will help because children will copy a role models actions, for example if an adult is to model how to pronounce a word in a book a child will copy this and therefore develop their vocabulary and language skills. (1)
12. Attachment refers to a strong emotional bond that develops between a child and their primary caregiver. According to theorists such as Bowlby attachment in infancy and early childhood are important in supporting a child's emotional and social development as it helps to promote confidence, therefore ensuring a good self-esteem. By supporting self-esteem through a positive attachment to a caregiver is then later supports future relationships according to Bowlby through his internal working model. Therefore, demonstrating how important attachment is during these life stages to ensure positive development occurs.
    However, poor attachments that are disrupted or insecure during infancy and early childhood can have negative consequences due to not having a positive influence/role model around them. For example, a child may experience mental health difficulties such as anxiety or aggression and may struggle forming future relationships later on. Therefore, it is clear that attachments are vital during these life stages as it lays down the foundation for healthy development.

    Please note: This response is marked using level indicators. The main aspects needed to hit the criteria for a 9-mark response is a brief introduction to the question, main content that applies knowledge of the question to context and a brief conclusion to summarise an overall judgement.

Recap questions – page 19

1. A symptom of cystic fibrosis includes **shortness of breath**.
2. A negative effect of not exercising can include **weight gain or increased stress levels.**
3. **Eating a healthy balanced diet** can impact foetal development in pregnancy.
4. **Sickle cell anaemia** causes abnormally shaped red blood cells.
5. **7-9 hours** of sleep per night is recommended.
6. Tobacco use can lead to physical health issues such as **emphysema.**
7. Lifestyle factors such as **substance use** can impact the quality of sleep a person gets.
8. If teeth are not cleaned regularly a person is a risk of **tooth decay.**
9. A prenatal vitamin that supports pregnancy includes **folic acid.**

Revision quiz – page 19

1. Ainsworth identified the attachment type of **anxious-resistant**. This means infants during the strange situation displayed conflicting behaviours as they would want to be in proximity to their primary caregiver but also reject their mothers. Ainsworth believed this was because of caregiving to infants that was inconsistent.
2. One common example of emotional development in adolescence is the development of **identity**. This is because an adolescent is beginning to understand who they are which shapes their identity and overall personality. Another example is the development of **intimate relationships** as adolescents are beginning to explore relationships beyond the typical family and friend scenario.
3. Menopause can impact physical development through its range of symptoms that women can experience such as **hot flushes and night sweats** which can impact upon sleep quality. Menopause also poses impacts upon emotional development such as **low mood** due to the changes associated with the menopause.
4. Genetic disposition refers to characteristics or health issues an individual can **inherit from their biological parents** through their genetics.
5. There is a **difference in life expectancy** between individuals from different socioeconomic groups.
6. People with a learning disability experience inequalities when accessing healthcare services because of a potential **lack of understanding** of how to access the service or a lack of understanding from the professional's perspective on how to best support individuals with learning disabilities.
7. Main features or symptoms of meningitis include a **fever, rash and vomiting**.
8. The life stages most prone to obesity are **early childhood and adolescence** due to them still being heavily influenced by others on what foods and drink they consume.
9. Herd immunity means that the **majority of a population are immune to a disease due to being vaccinated against it.**
10. The role of a speech therapist is to **assess and treat individuals** with any communication or swallowing issues; they typically work with **individuals over the age of 12 months old** once an issue with language has been identified.
11. The main features of an integrated care system are to allow **services and professionals to work together through a partnership** to support quality of care.
12. Quality of sleep is important for overall health and wellbeing because it allows for **energy levels to be restored** so daily functioning can continue and supports **cell repair.**

Recap questions – page 24

1. An environmental factor that leads to a health inequality includes **unsafe housing conditions.**
2. An example of an occupational health condition is **COPD.**
3. **Men** are more likely to experience mental health difficulties without seeking support because it is often considered less masculine to talk about their feelings, so men often choose to not get any support.
4. The term discrimination means **to treat a person or group of people unfairly because of a protected characteristic such as religion.**
5. A postcode lottery can lead to health inequalities due to the **impact of resources and services available in a particular area**. For example, a deprived area with limited services may increase the amount of health issues individuals suffer with.
6. Economic factors influence health inequalities due to the amount of **income a person has or their employment status**. For example, individuals on a low income or are unemployed are more likely to be unable to afford a healthy lifestyle.
7. One reason for a difference in life expectancy amongst different socioeconomic groups is based upon the **types of jobs available** for individuals, this then causes disparities between income. A person on a higher income will have a longer life expectancy due to being able to afford a healthy lifestyle and good medical care compared to someone on a lower income.
8. A health condition linked to an environmental factor includes **asthma.**

Revision quiz – page 24

1. Emotional development common in early adulthood include developing a long-term **intimate relationship**, **changes to self-concept/esteem/image** and the development of **new bonds and attachment**.
2. A cognitive super ager is an individual who **experiences no cognitive decline** due to experiencing good brain structure and active brain function into late/later adulthood.
3. The main features of cystic fibrosis include a **cough, shortness of breath and a build up of thick sticky mucus in the lungs.**
4. Stress at work is most likely in the life stage of **early/middle adulthood.** This is because **of the pressure of work deadlines or issues with colleagues that may arise.**
5. The purpose of a vaccination is to **prevent the spread of disease by causing the body to create antibodies for that disease so that the body can effectively fight off the disease.** This also supports herd immunity.

Assessment practice – page 24

1. One lifestyle factor that can impact physical development is smoking cigarettes (1). This is because the carcinogens in cigarettes can cause cancerous cells to mutate forming tumours. (1) Another lifestyle factor includes a healthy balanced diet (1) this can impact physical development because it contributes to a healthy weight gain and good energy levels. (1)
2. Genetic predisposition means an individual is more likely to experience a health condition due to it being passed down from biological parents, although the condition needs to be activated by external factors. (1)
3. One-way environmental factors can contribute to health inequalities is through exposure to pollution (1). This causes health inequalities because those who live in more urban areas will experience more pollution-based illnesses than those who live in rural areas. (1)
4. A) An example of a genetic disorder is Huntington's disease (1). B) The main aspects of this disease are that is prevents parts of the brain from functioning over time (1), it is inherited from both parents each with their own copy of the HTT gene (1) main symptoms include mood swings, memory loss and reduced mobility based on the parts of the brain affected (1) and there is currently no cure for this disease only treatments to help manage the disease. (1)
5. A health condition associated with occupational health inequalities is musculoskeletal problems. (1)
6. The main impacts of poor oral health are bad breath from not removing bits of food between teeth (1), tooth decay if plaque is allowed to build up (1) and gum disease. (1)
7. The current NHS definition of health inequalities is 'unfair and avoidable differences in health across the population, and between different groups within society'. (1)
8. Discrimination can lead to health inequality because it can cause low levels of trust within a service (1) this is because if an individual has been treated unfairly they may choose not to take on board any advice from the professionals within the service, therefore causing further health issues and inequalities. (1)
9. Economic factors such as income and employment can have direct impacts upon health and wellbeing which then generates health inequalities between different social groups.
   Low income for example can limit access to healthy nutritious foods, clean and warm housing, this means for these individuals they have an increased risk of illnesses such as obesity and type 2 diabetes due consuming cheaper unhealthier foods. This then generates a health inequality between individuals on differing incomes.

Economic factors therefore do have a lasting impact on health inequalities and consequently health and wellbeing. The economic factor that I believe can have the biggest impact upon health inequalities is income, this is because of the disparities between salaries depending upon the job.

Please note: This response is marked using level indicators. The main aspects needed to hit the criteria for a 9-mark response is a brief introduction to the question, main content that applies knowledge of the question to context and a brief conclusion to summarise an overall judgement.

Recap questions – page 29

1. A prevalent health condition in infancy includes an **ear infection**.
2. A risk-taking behaviour in adolescence is **unprotected sexual encounters** leading to issues with unplanned pregnancies or sexually transmitted infections.
3. A health issue relating to obesity includes **hypertension**.
4. A brain injury could be acquired in middle adulthood due to risk taking behaviours such as **reckless driving**.
5. Dental cavities in early childhood are caused by a **build up of plaque causing the enamel around the tooth to become damaged**. Plaque build up in childhood is often caused by poor oral hygiene or high consumption of sugary foods and drink.
6. Heart disease occurs when a **build up of fatty plaque in the coronary arteries forms and the blood supply to the heart is disrupted or completely blocked.** This can then lead to symptoms such as shortness of breath or angina.
7. Individuals in late and later adulthood have a weakened immune system due to a process linked to **natural ageing known as immunosenescence.**
8. **Conjunctivitis** is associated with redness and secretions around the eyes in infancy and early adulthood.
9. Depression and anxiety at work are more likely to occur in the life stages of **early and middle adulthood.**
10. A factor that can contribute to a falls risk and injury is **slippery surfaces in the environment.**

Revision quiz – page 30

1. An example of a NHS health check includes a **smear test for cervical cancer.** This type of check is suitable for individuals between **25-64 years old**.
2. The role of a psychiatrist is to **diagnose, treat and prevent mental health disorders** by working alongside other health care professionals to support a patient needs or by prescribing medication.
3. Some of Roper and Tierney's activities of daily living include **communication and sleeping**. The purpose of these activities are to determine how much of an

individual's life **has been affected by an illness or injury** so that professionals can put adequate support in place to support an individual independent and quality of life.

4. One type of intellectual development in infancy is the ability to say **simple phrases by the age of 2 years**, often infants do this by mimicking a role models use of words. Another type of intellectual development is the ability to **recognise familiar faces**, as infants are surrounded by the same types of people in this life stage, they can respond to these faces better compared to a stranger.
5. Both multi-agency and multi-disciplinary approaches are important in person-centred care because in order for the **holistic needs of an individual to be met** the person needs to the relevant support from both professionals and services and by these agencies working together it allows for high quality care to be given.
6. Risk factors that dentists commonly treat include a **high sugar diet, smoking and poor oral hygiene.**
7. The role of a podiatrist is to **treat patients with foot or ankle problems** such as infections. They can provide treatments as well as advice to prevent further infections.

Recap questions – page 32

1. Herd immunity refers to a **large number of the population being vaccinated against a specific disease.**
2. One example of a disease there is a vaccine for is **MMR**.
3. One health screening test conducted on a newborn is a **hearing test.**
4. Individuals are educated about sexual health through **health education campaigns in school** and through **information and advice** provided by health care professionals.
5. Diabetes is tested by **blood tests and blood sugar checks**.
6. Mental health education is important for individuals to **recognise the signs and symptoms of common mental health issues** so that they can seek appropriate support. This is also important for **empowering individuals** and **reducing stigma** around mental health.
7. Individuals can be screened for **bowel cancer**.
8. Dental health education aims to **prevent poor dental health** and conditions such as **tooth decay.**
9. One example of an accident prevention campaign is **child safety week.**
10. Another example of an NHS health check is **dementia screening.**

Revision quiz – page 32

1. The main features of Huntington's disease include that it is caused by a **dominant gene** and causes symptoms such as **reduction mobility and difficulty swallowing and speaking.**

2. Physical changes during puberty can vary between genders. For example, females will experience the **onset of their menstrual cycle** as their body is now prepared to host a pregnancy if fertilisation of the egg occurs during ovulation. Whereas males may experience changes in the appearance such as **facial hair and broader shoulders.**
3. Synaptic pruning refers to the **removal of neural connections in the brain** that are no longer used.
4. A person's social life may improve in late adulthood due to becoming retired and having more **free time to socialise** with family or friends, it even allows the opportunity to **form new friendships** by participating in new hobbies. However, an individual's social life could get worse in this life stage due to **bereavements** as typically individuals entering late adulthood may experience the loss of loved ones. They may also experience **poor health or reduced mobility** which also limits their social interactions.
5. A healthy diet can have positive impacts on health such as the **maintenance of a healthy weight and a stronger joints.** This is because the diet is providing the necessary nutrients needed for bone health. For example, calcium and vitamin D help to maintain strong bones which prevents breakages or fractures.
6. The health impacts of drinking alcohol in excess include **cirrhosis and liver disease.**
7. Environmental inequalities such as unsafe housing conditions can cause health issues such as **asthma from breathing in pollutants from mouldy conditions**.
8. One link between discrimination and health outcomes is that it can cause **poorer health outcomes** for those who experience discrimination. For example, some groups of individuals can experience limited access to services due to a particular protected characteristic which then decreases the amount of positive health outcomes a group of individuals experience.

Recap questions – page 37

1. A professional that can support individuals with their diet is a **dietician**.
2. Two types of nurses include a **mental health nurse and learning disability nurse**.
3. A type of doctor that works in primary care is a **general practitioner (GP).**
4. The role of a midwife is providing **care and support to pregnant women both during the antennal and postnatal period**. For example, they provide health education and will monitor the health of mother and baby, such as checking foetal movements and heartbeat.
5. Two types of allied health professional include a **physiotherapist and podiatrist**.
6. The main purpose of a dentist is to **monitor oral health** through regular dental checks and **provide treatments** to patients such as fillings or dentures.

7. The most appropriate professional to support an individual with schizophrenia is a **psychologist.**
8. A social prescriber is a professional who is supportive of improving health and wellbeing by making **referrals to non-clinical services** which may be better at providing a service for those individual's needs, this then creates more appointments within clinical services for individuals with health care needs that need more professional support.
9. Two life stages a youth worker is most likely to support includes **adolescence and early adulthood.**
10. The term domiciliary means to **support an individual within their own home.**
11. An integrated care system is where a **range of professionals and services form a partnership to ensure high quality care is provided.**
12. A person-centred approach is when the **holistic need of an individual is considered** and professionals will ensure these needs are met to provide high quality care.
13. The term holistic means to **consider all aspects of individuals life**, including all areas of PIES.
14. The model about activities of daily living was developed by **Roper and Tierney**.
15. Communication is important within a multi-disciplinary team because it ensures that **everyone involved understands their role and the needs of the individual**, without this it can result in poor health outcomes for the patient.
16. Multi-disciplinary teams also need to work with **families and significant others** and not just professionals.
17. An example of a daily activity includes **washing and dressing.**
18. It is important for professionals to share decisions so that the best decision is made for the benefit of the patient; by discussing options with other professionals and family members it allows for all areas of care to be considered.
19. A multi-disciplinary team is a **group of professionals** from a variety of specialisms work together to support an individual, whereas a multi-agency team is when a **range of services or teams** come together to support one patient.
20. The possible implications of a multi-disciplinary team failing are **poor health outcomes and damage to professional reputation.**

Revision quiz – page 38

1. A common health condition in late adulthood is **osteoporosis.**
2. The impacts of substance misuse such as smoking or vaping in adolescence include **breathlessness or a cough**, in some cases **lung cancer** can occur but only after long term use.

3. The main features of cystic fibrosis are that it is developed from a mutated gene from both parents, known as a **recessive gene**. Symptoms include **shortness of breath and a cough**. There is **no current cure** but treatments to help the management of the condition.
4. Risk factors for developing prostate cancer include the **BRCA1/2 gene.**
5. In later adulthood an individual joints and bones health can decline due to **loss of bone density** known as osteoporosis. Joints can also become stiffer due to the **cartilage inside the joints becoming thinner**.
6. The age range of middle adulthood is **46-69 years.** The loss of libido could be affected during this age range because of the **perimenopause/menopause.**
7. Three symptoms of menopause include the **loss of libido, night sweats and vaginal dryness.**
8. Emotional regulation begins in the age range of **3-8 years. (early childhood)**

Assessment practice – page 38

1. Dental hygienist. (1)
2. Dementia (1)
3. Herd immunity refers to the majority of a population being vaccinated against a specific disease. (1)
4. Health visitor (1)
5. One way the midwife and social worker can work together is through communication. (1) for example they can share concerns about the health needs of the pregnancy and housing issues so that the social worker can arrange appropriate housing assistance. (1) another way they can work together is by safeguarding the patient (1) this means that both professionals are aware of a plan to safeguard both baby and mother to ensure all are safe during antenatal and postnatal care. (1)
6. Primary care settings such as GP surgeries. (1)
7. A multi-disciplinary team is defined as a group of professionals with differing specialisms working together to meet the needs of one patient. (1)
8. Shared decision-making and working with families (2)
9. The main purpose of a vaccination is to help the body generate antibodies against a specific disease (1) for example a common vaccine includes the flu vaccine (1).
10. Breast cancer (1)
11. One reason for obesity in adolescence could be peer pressure (1) this is because peers may encourage the consumption of unhealthy foods in excess leading to rapid weight gain. (1)

12. A youth worker supports young people in adolescence and early adulthood to overcome specific challenges in their lives. For example, this can include their diet.

    Youth workers are able to provide a level of education to raise awareness about eating a healthy balanced diet and how young people can portion control as well as providing education about the associated health risks of an unbalanced diet. It is important that a youth worker empowers individuals to make informed choices rather than enforcing decisions upon them. This will then help to improve their diet as individuals will feel more in control of their options and are more likely to then alter their diet.

    However, youth workers may have to overcome some barriers when educating young people, such as poverty as this can limit a person's access to fresh and healthy foods. Therefore, youth workers may not always be the most equipped to support an individual in improving their diet.

    Overall, a youth worker can have some influence over improving a person's diet but external factors that could impact a young person are out of their control which then means a youth workers job could be limited in terms of how much support can be given.

Please note: This response is marked using level indicators. The main aspects needed to hit the criteria for a 9-mark response is a brief introduction to the question, main content that applies knowledge of the question to context, for an evaluation command word the response needs to weigh up both sides of an argument and a brief conclusion to summarise an overall judgement.

Unit 2

Page 44 recap questions

1. The cell membrane protects the cell and controls what substances enter and exit.
2. The nucleus is the 'control centre' of the cell and contains the DNA.
3. The main function of mitochondria is to generate ATP/release energy for the cell, which is why they are often called the "powerhouses" of the cell.
4. The four main types of tissue are epithelial, connective, muscle, and nervous.
5. Epithelial tissue provides a protective covering for the body's internal and external surfaces and can also be involved in secretion and absorption.
6. Three types of connective tissue include loose connective tissue, dense connective tissue, and specialised connective tissue (such as cartilage, bone, and blood).
7. The three types of muscle tissue are skeletal, cardiac, and smooth.
8. Nervous tissue transmits and processes information through electrical signals.
9. The process of breaking down complex molecules into simpler ones to release energy is called catabolism.
10. The end products of aerobic respiration are carbon dioxide, water, and ATP (energy).
11. The end product of anaerobic respiration in muscles is lactic acid.
12. Basal Metabolic Rate (BMR) is the rate at which the body expends energy while at rest.
13. Homeostasis is the maintenance of a stable internal environment in the body.
14. The process of maintaining a stable internal body temperature is called thermoregulation.
15. When blood sugar levels are high, the pancreas releases the hormone insulin.

Pg44 revision quiz

1. Deoxygenated blood enters the **right atrium** from the **vena cava**, moves to the **right ventricle**, then is pumped to the **lungs** via the pulmonary artery. Oxygenated blood returns from the lungs to the **left atrium** via the pulmonary veins, then goes to the **left ventricle**, which pumps it to the **aorta** for distribution to the body.
2. Insulin: Lowers blood sugar by helping cells absorb glucose.
   Thyroxine: Regulates the body's metabolism.
   Adrenaline: Triggers the "fight or flight" response, increasing heart rate and energy.
3. Skeletal muscle is voluntary, striated, and moves bones. Smooth muscle is involuntary, non-striated, and found in internal organs. Cardiac muscle is involuntary, striated, and found only in the heart.
4. A **TIA** is a temporary "mini-stroke" caused by a brief blockage of blood flow to the brain, with symptoms that resolve quickly without causing permanent damage.

5. Common triggers include allergens (pollen, dust), irritants (smoke, pollution), respiratory infections, exercise, and cold air.
6. Obesity leads to **insulin resistance**, where the body's cells don't respond well to insulin. This forces the pancreas to work harder, and over time, it can't produce enough insulin to control blood sugar, leading to **type 2 diabetes**.
7. Primary effects: Difficulty finding words, using the wrong words, and losing train of thought. Secondary effects: Frustration, social withdrawal, and reliance on non-verbal communication.
8. Key risk factors include **age** (over 50), a diet high in red meat and low in fibre, **obesity**, **smoking**, and a **family history** of the disease.
9. Enzymes are proteins that act as catalysts, speeding up the breakdown of large food molecules. They break down carbohydrates (amylase), proteins (proteases), and fats (lipase) into smaller, absorbable nutrients.

Assessment practice - Section A pg 45

1. cartilage
2. (clockwise) ribosome, mitochondria, nucleus, cell membrane
3. The main function of mitochondria is to generate ATP/release energy for the cell, which is why they are often called the "powerhouses" of the cell. Ribosomes are involved in the production of proteins.
4. Catabolism breaks down complex molecules to release energy, while anabolism uses energy to build complex molecules from simpler ones.
5. glucose + oxygen → carbon dioxide and water
6. Aerobic respiration uses oxygen, produces a large amount of ATP, and its end products are carbon dioxide and water. Anaerobic respiration does not use oxygen, produces a small amount of ATP, and its end products are lactic acid (in muscles) or ethanol and carbon dioxide (in yeast).
7. Metabolism: For essential bodily functions like breathing, circulation, and cell repair. Physical activity: For all types of muscle movement, from walking to exercising. Thermoregulation: To maintain a constant body temperature.
8. Homeostasis is the process by which the body maintains a stable internal environment despite changes in the external surroundings.
9. The hypothalamus acts as the body's thermostat. When you're hot: Blood vessels near the skin dilate (vasodilation) to release heat. You sweat, and as the sweat evaporates, it cools you down. When you're cold: Blood vessels near the skin constrict (vasoconstriction) to conserve heat. Muscles shiver to generate heat, and tiny hairs on the skin stand up (piloerection) to trap a layer of warm air.
10. glucagon and insulin

11. The pancreas, part of the endocrine system, regulates blood glucose using two hormones: insulin and glucagon. When blood sugar rises (e.g., after a meal), the pancreas releases insulin. Insulin helps cells absorb glucose from the blood and signals the liver to store excess glucose as glycogen, lowering blood sugar. When blood sugar drops, the pancreas releases glucagon. Glucagon signals the liver to break down stored glycogen into glucose, releasing it into the bloodstream and raising blood sugar. These hormones work opposite each other to maintain a stable balance.
12. The brain and kidneys work together to maintain water balance (osmoregulation) through a feedback loop involving a hormone called antidiuretic hormone (ADH).
    Brain: The hypothalamus in the brain acts as the body's control centre. It contains osmoreceptors that detect the concentration of solutes in the blood. If the blood is too concentrated (you're dehydrated), the hypothalamus signals the pituitary gland to release ADH into the bloodstream. It also triggers the feeling of thirst.
    Kidney: When ADH reaches the kidneys, it makes them more permeable to water, allowing more water to be reabsorbed from the urine back into the blood. This conserves water, resulting in less, more concentrated urine.

Recap questions pg 51

1. Right Atrium: Receives deoxygenated blood from the body.
   Right Ventricle: Pumps deoxygenated blood to the lungs.
   Left Atrium: Receives oxygenated blood from the lungs.
   Left Ventricle: Pumps oxygenated blood to the rest of the body
2. Main Components of Blood
   Red blood cells: Transport oxygen and carbon dioxide.
   White blood cells: Fight infection as part of the immune system.
   Platelets: Initiate blood clotting to stop bleeding.
   Plasma: The liquid component that transports blood cells, nutrients, hormones, and waste products.
3. Red blood cells have a biconcave shape and lack a nucleus, giving them a large surface area-to-volume ratio to increase oxygen absorption. Haemoglobin is a protein inside red blood cells that contains iron and binds to oxygen in the lungs, carrying it to tissues throughout the body.
4. Pulmonary circulation moves deoxygenated blood from the right side of the heart to the lungs and returns oxygenated blood to the left side of the heart. Systemic circulation moves oxygenated blood from the left side of the heart to the rest of the body, then returns deoxygenated blood to the right side of the heart.
5. Arteries: Thick, muscular, and elastic walls; carry blood under high pressure away from the heart.

Veins: Thin walls and contain valves; carry blood under low pressure back to the heart.
Capillaries: Very thin, one-cell-thick walls; allow for the exchange of gases, nutrients, and waste between blood and tissues.

6. Air enters through the nose/mouth, down the trachea, into the bronchi, then into smaller bronchioles, and finally reaches the tiny air sacs called alveoli.
7. Alveoli have a massive surface area, are only a single cell thick, and are surrounded by a network of capillaries. This thin, moist structure creates a very short diffusion distance, allowing for rapid and efficient gas exchange between the air in the alveoli and the blood in the capillaries.
8. Ventilation is the physical process of moving air in and out of the lungs (breathing). Gas exchange is the biological process of exchanging gases (oxygen and carbon dioxide) between the alveoli and the bloodstream via diffusion.
9. During inhalation, the diaphragm contracts and flattens, and the external intercostal muscles contract, pulling the ribcage up and out. This increases the volume of the chest cavity, which decreases air pressure inside the lungs, causing air to rush in.
10. Mucus traps dust, pathogens, and other particles from inhaled air. Cilia, tiny hair-like structures lining the airways, rhythmically beat and move the mucus and trapped particles upward, toward the throat, where they can be swallowed or coughed out.

Revision quiz pg 51

1. The cell membrane acts as a barrier, protecting the cell's contents and controlling which substances enter and exit.
2. Catabolism breaks down complex molecules to release energy, while anabolism uses energy to build complex molecules from simpler ones.
3. ATP (adenosine triphosphate) is the primary molecule for storing and transferring energy in cells. It's the "energy currency" that powers most cellular activities.
4. The pituitary gland, often called the "master gland," produces and secretes hormones that regulate the function of other endocrine glands in the body, such as the thyroid, adrenal glands, and testes and ovaries.
5. A negative feedback mechanism works by stopping a process when a certain condition is met. For example, when a hormone's level gets too high, it sends a signal to its source to stop production, bringing the level back down to a normal range.
6. The lymphatic system maintains fluid balance in the body, transports fats from the digestive system, and is a key part of the immune system, defending against infections.
7. High blood pressure (hypertension): Puts extra strain on arteries.
   High cholesterol: Leads to the buildup of plaque in arteries.

Smoking: Damages blood vessels and increases heart rate and blood pressure.
Obesity and lack of physical activity.

8. Cardiovascular disease (heart attacks, strokes)
   Kidney damage (nephropathy)
   Nerve damage (neuropathy)
9. Age: Risk increases with age.
   Family history: A close relative with breast or ovarian cancer increases risk.
   Genetics: Inheriting specific genes, such as BRCA1 or BRCA2, significantly raises risk.
   Hormonal factors: Early menstruation, late menopause, or hormone replacement therapy.
   Lifestyle factors: Alcohol consumption, obesity, and a sedentary lifestyle.

Pg58 recap questions

1. Nervous tissue is made of two main types of cells: neurones, which transmit nerve impulses, and neuroglia (or glial cells), which support and protect the neurones.
2. The Central Nervous System (CNS) includes the brain and spinal cord and acts as the body's control centre, it interprets information and responds to information coming in through sensory neurones. The Peripheral Nervous System (PNS) is a network of nerves that branch out from the CNS to the rest of the body. The PNS transmits sensory information to the CNS and carries motor signals from the CNS to muscles and glands.
3. Sensory neurones carry information from sensory receptors in the skin, eyes, ears, etc., to the CNS. They transmit this information by converting the sensory stimulus (like touch or light) into an electrical nerve impulse that travels along the neurone's axon toward the spinal cord and brain.
4. When you touch a hot pan, specialised sensory receptors in your skin are activated by the heat. They generate a nerve impulse that is transmitted along a sensory neurone to the spinal cord. In the spinal cord, this impulse is passed to a relay neurone (or interneurone) which then immediately activates a motor neuron. This motor neurone sends a signal to the muscles in your hand and arm, causing them to contract and pull your hand away from the heat in a fast, involuntary action called a reflex arc.
5. Motor neurones carry nerve impulses from the CNS to muscles and glands. Their function is to initiate a response, such as muscle contraction or glandular secretion.
6. Neuroglia are non-neuronal cells in the nervous system that provide support and protection for neurons. Three of their key functions are:
   Providing structural support: They act as a scaffold to hold neurones in place.

Forming the myelin sheath: Some glial cells wrap around axons to create a fatty layer called myelin, which insulates the axon and allows nerve impulses to travel faster.
Maintaining homeostasis: They regulate the chemical environment around neurones, providing nutrients and clearing waste products.

7. The autonomic nervous system (ANS) is a part of the peripheral nervous system that controls involuntary physiological processes. This includes functions that happen automatically without conscious thought, such as heart rate, breathing, blood pressure, digestion, and body temperature regulation.
8. The autonomic nervous system is divided into two branches with opposite functions. The sympathetic nervous system prepares the body for action, triggering the "fight or flight" response in stressful situations. It increases heart rate, dilates pupils, and slows down digestion. The parasympathetic nervous system promotes a state of calm and energy conservation, triggering the "rest and digest" response. It lowers heart rate, constricts pupils, and stimulates digestion.
9. The endocrine system produces and secretes hormones to regulate a variety of body functions, including metabolism, growth, and reproduction. The renal system (kidneys) filters blood and excretes waste, also regulating fluid and electrolyte balance. They maintain homeostasis by working together to control blood pressure and water balance. For example, the release of the hormone aldosterone from the adrenal glands, signals the kidneys to increase water and salt reabsorption, which raises blood volume and pressure back to a stable level.
10. The hypothalamus is a link between the nervous and endocrine systems. It is part of the brain, and it receives signals from the nervous system about the body's internal state. It then responds by producing hormones that either stimulate or inhibit the pituitary gland, (the "master gland" of the endocrine system). The pituitary gland then releases its own hormones, which in turn control other endocrine glands throughout the body.
11. The thyroid gland produces hormones, which regulate the body's metabolism. These hormones influence the rate at which cells convert food into energy. In children, thyroid hormones are essential for normal growth and development, particularly for bone growth and the maturation of the brain and nervous system.
12. Testosterone: A primary male sex hormone, testosterone drives the development of male secondary sexual characteristics during puberty, such as deepening of the voice, growth of facial and body hair, and increased muscle and bone mass. It is also essential for sperm production.
    Oestrogen: A primary female sex hormone, oestrogen is responsible for the development of female secondary sexual characteristics like breast development, widening of the hips, and the start of the menstrual cycle. It is also crucial for maintaining bone density and reproductive health.
    Progesterone: A female hormone, progesterone's main role is to prepare the uterus for pregnancy. It thickens the uterine lining to allow a fertilised egg to implant and

helps maintain the pregnancy. If pregnancy doesn't occur, its levels drop, triggering menstruation.

Pg 58 revision quiz

1. epithelial, connective, muscle, and nervous tissue.
2. Homeostasis is the process by which a living organism maintains a stable internal environment to function correctly. This includes regulating things like body temperature, blood sugar, and fluid balance.
3. Common early signs and symptoms of breast cancer include a new lump or swelling in the breast or underarm, a change in the size or shape of the breast, dimpling or puckering of the skin (like an orange peel), and nipple changes such as turning inward or nipple discharge.
4. Alzheimer's disease is caused by the buildup of protein plaques and tangles in the brain, leading to a gradual decline in memory and cognitive function.
   Vascular dementia is caused by damage to blood vessels in the brain, often from strokes or "mini-strokes" (TIAs), which can lead to a more sudden decline in cognitive ability.
5. wheezing, coughing, a feeling of chest tightness, and shortness of breath.
6. the walls of the tiny air sacs in the lungs (alveoli) are damaged and break down. This causes the alveoli to merge into larger, less efficient air spaces, which reduces the surface area available for gas exchange. The lungs also lose their natural elasticity, trapping air and making it hard to exhale.
7. ischaemic stroke (caused by a blocked blood vessel in the brain) and a haemorrhagic stroke (caused by a burst or leaking blood vessel in the brain).
8. The liver produces a digestive fluid called bile, which helps to break down fats. The gallbladder's role is to store and concentrate the bile produced by the liver, releasing it into the small intestine when needed.
9. Gas exchange occurs in the alveoli. When a person inhales, oxygen moves from the air in the alveoli across their thin walls into the bloodstream (low oxygen concentration). At the same time, carbon dioxide, a waste product from the body, moves from the blood in the capillaries into the alveoli to be exhaled.

Pg65 recap questions

1. The musculoskeletal system consists of bones, which provide the body's framework; muscles, which generate force for movement; and joints, which allow for mobility. Together, they enable movement, support the body, and protect internal organs.

2. Cartilage is a flexible, smooth connective tissue found in many parts of the body, including the ears, nose, and between bones. In joints, its primary function is to cushion the ends of bones, reducing friction and preventing them from rubbing against each other, allowing for smooth movement.
3. Antagonistic muscle pairs consist of a prime mover (agonist) and an opposing muscle (antagonist). They work in opposition to produce controlled movement; when one contracts, the other relaxes. For example, in the arm, the biceps contracts to flex the elbow, while the triceps relaxes. To extend the arm, the triceps contracts, and the biceps relaxes.
4. Synergistic muscles are muscles that assist the prime mover in performing a specific movement. They work with the main muscle to produce a more powerful or precise action. For example, during bicep curls, the muscles in the forearm act as synergists to stabilise the wrist and prevent unwanted movement.
5. Fixator muscles are a type of synergist that stabilize a joint or a part of the body, so that other muscles can generate a force more effectively. They are important for maintaining posture and balance during movement. For instance, the rotator cuff muscles in the shoulder fix the scapula (shoulder blade) to allow the deltoid muscle to lift the arm.
6. The nervous system sends electrical signals from the brain and spinal cord to muscles, causing them to contract and produce movement. Sensory neurones within the muscles and joints send feedback to the nervous system about body position, tension, and movement, which helps the nervous system make adjustments to maintain posture and coordinate further actions.
7. Fibrous joints are held together by dense connective tissue and are immovable. Their role is to provide maximum stability and support. Examples include the sutures between the bones of the skull, which protect the brain.
8. cartilage: Covers bone ends, reducing friction.
   Joint capsule: Encloses the joint, providing stability.
   Synovial membrane: Lines the capsule, producing synovial fluid.
   Synovial fluid: A lubricant that reduces friction and provides nutrients to the cartilage.
   Ligaments: Connect bones, providing stability.
9. Synovial fluid lubricates the joint, reducing friction between the bones, and acts as a shock absorber. Cartilage covers the ends of the bones, providing a smooth surface that protects them and absorbs shock during movement.
10. The innate immune system provides a rapid, non-specific response to any foreign invader. The adaptive immune system provides a slower, highly specific, and long-lasting response.
11. White blood cells (leukocytes) are the immune system's primary defenders against pathogens.
    Phagocytes (like macrophages) engulf and destroy pathogens.

lymphocytes (B cells and T cells) are responsible for the specific, adaptive immune response.
Natural killer cells destroy infected or cancerous cells.

12. Antibodies are proteins produced by B cells in the adaptive immune response. They bind to specific antigens (foreign substances) on pathogens, neutralising them, marking them for destruction by other immune cells, and preventing them from entering or infecting other cells.
13. The circulatory system transports immune cells (white blood cells) throughout the body to sites of infection. The lymphatic system collects fluid, pathogens, and dead cells from tissues, filters them through lymph nodes where immune cells can be activated, and returns the cleaned fluid to the circulatory system.
14. The musculoskeletal system is where a significant part of the immune system is created. Bone marrow, found within bones, is the site of haematopoiesis, the process of creating all blood cells, including white blood cells. Bones also contain the bone marrow where immune cells mature and are stored.
15. The lymphatic system consists of lymph, lymph vessels, lymph nodes, and lymphatic organs (like the spleen and thymus). Its main functions are fluid balance, fat absorption, and immune defence.
16. The lymphatic system collects excess tissue fluid (lymph) that has leaked from capillaries and returns it to the bloodstream. This prevents the buildup of fluid in tissues, which would lead to swelling (oedema).
17. The lymphatic system is a one-way drainage system that works alongside the circulatory system. While the circulatory system pumps blood in a continuous loop, the lymphatic system drains excess fluid from tissues and returns it to the circulatory system at the subclavian veins near the neck.
18. Lymph nodes are small, bean-shaped organs that act as filters. They contain concentrations of immune cells, such as lymphocytes, that monitor the lymph fluid for pathogens. When a pathogen is detected, the immune cells are activated and multiply, initiating an immune response.
19. The lymphatic system has a special role in the digestive system. Lacteals, specialised lymphatic vessels in the small intestine, absorb dietary fats and fat-soluble vitamins that are too large to be absorbed directly into the bloodstream. These fats are then transported to the circulatory system.
20. The testes are the primary male reproductive organs. They produce sperm and the male hormone testosterone. The penis is the external male organ that contains the urethra, a tube for the passage of urine and semen during ejaculation.
21. The ovaries are the primary female reproductive organs. They produce eggs and the female hormones oestrogen and progesterone. The uterus is a hollow, muscular organ where a fertilised egg can implant and a foetus can develop. The vagina is a muscular canal that serves as the birth canal and as a passageway for menstrual flow.

22. FSH (follicle-stimulating hormone) stimulates egg maturation in the ovaries.
    LH (luteinizing hormone) triggers ovulation (the release of the egg).
    Oestrogen promotes the thickening of the uterine lining and develops female secondary sex characteristics.
    Progesterone maintains the uterine lining for potential pregnancy.
23. Endocrine: Hormones from the endocrine system control the entire reproductive cycle and sexual development.
    Circulatory: The circulatory system transports hormones, immune cells, and nutrients to and from the reproductive organs.
    Nervous: The nervous system controls sexual arousal, reflexes, and hormonal release.
    Immune: The immune system protects the reproductive organs from infection.
24. Food enters the mouth (chewing and salivary enzymes), goes down the oesophagus, into the stomach (acid and enzymes break down proteins), then into the small intestine (further digestion and nutrient absorption), into the large intestine (water absorption), and finally out through the rectum and anus.
25. Liver: Produces bile to digest fats.
    Gallbladder: Stores and concentrates bile.
    Pancreas: Produces digestive enzymes (like amylase, lipase, and proteases) and bicarbonate to neutralise stomach acid.
    Salivary glands: Produce saliva with enzymes (amylase) to start carbohydrate digestion.

Pg 66 revision quiz

1. The ribosome is responsible for protein synthesis.
2. The mitochondrion is the 'powerhouse' of the cell, carrying out cellular respiration to release energy/ generate ATP
3. Bone: Provides structural support and protection.
   Cartilage: Cushions joints and provides flexibility.
   Blood: Transports oxygen, nutrients, hormones, and waste.
4. Skeletal muscle: Found attached to bones; responsible for voluntary movement.
   Smooth muscle: Found in internal organs (e.g., stomach, blood vessels); responsible for involuntary movements.
   Cardiac muscle: Found only in the heart; responsible for pumping blood.
5. Arteries carry oxygenated blood away from the heart under high pressure. Veins carry deoxygenated blood back to the heart under low pressure.
6. Haemoglobin is a protein in red blood cells that binds to oxygen in the lungs and releases it in the body's tissues, transporting oxygen throughout the body.

7. A neurone (nerve cell) transmits electrical and chemical signals throughout the body, forming the basis of the nervous system.
8. The Central Nervous System (CNS) is the brain and spinal cord. The Peripheral Nervous System (PNS) consists of all the nerves outside the CNS
9. Bones provide structural support, protect internal organs, allow for movement, store minerals, and produce blood cells in the bone marrow.
10. A synovial joint has a joint capsule surrounding a fluid-filled cavity. It contains cartilage on the bone ends, a synovial membrane that produces lubricating synovial fluid, and ligaments for stability.
11. Tendons connect muscles to bones. Ligaments connect bones to other bones.
12. Motor impairment: Paralysis or weakness on one side of the body.
    Speech and language difficulties: Trouble speaking or understanding others.
    Cognitive deficits: Memory loss or problems with thinking and judgment.
13. The two main conditions under the umbrella term of COPD (Chronic Obstructive Pulmonary Disease) are chronic bronchitis and emphysema.
14. Respiratory infections (e.g. pneumonia) and heart problems.
15. Type 1 diabetes is an autoimmune condition where the body's immune system attacks and destroys the insulin-producing cells in the pancreas.
16. Chronic inflammation can lead to permanent airway thickening and scarring, resulting in irreversible lung damage.
17. Healthy diet (low in sugar and processed foods), regular physical activity, weight loss (if overweight).
18. the most common causes are Alzheimer's disease and vascular dementia.
19. Dementia can affect the brain's ability to control body functions, leading to problems with balance and mobility, decreased coordination, and a loss of bladder and bowel control.
20. Acquired Brain Injury (ABI) can cause difficulties with memory, attention, problem-solving, and information processing.
21. The main genetic mutations associated with an increased risk of breast cancer are BRCA1 and BRCA2.
22. Bowel cancer can cause a blockage in the intestines, leading to constipation or diarrhoea, abdominal pain, and bleeding that can result in anaemia.
23. The nephron is the functional unit of the kidney. Its primary function is to filter blood, removing waste products and excess substances to form urine.
24. Urine is composed mainly of water, along with waste products like urea, excess salts, and other dissolved substances.
25. The alveoli are tiny air sacs in the lungs where gas exchange takes place. Oxygen is transferred from the lungs to the blood, and carbon dioxide is transferred from the blood to the lungs to be exhaled.

26. Osmoregulation is the maintenance of water and salt balance in the body. The kidneys play a key role in this process by adjusting the amount of water and salt excreted in the
    urine.

Assessment practice pg 67 & 68

1. A = right atrium B= pulmonary artery C = left ventricle
2. Valves in the heart act as one-way gates. They prevent the backflow of blood, ensuring it flows in a single direction through the heart's chambers and out to the arteries.
3. White blood cells (leucocytes) are the body's primary defence against pathogens. Some, like phagocytes, directly engulf and destroy invaders such as bacteria and viruses. Others, like lymphocytes, produce antibodies that target and neutralise specific pathogens, providing a highly effective, long-lasting immune response.
4. X = cerebrum Y = cerebellum Z = brainstem
5. The sympathetic nervous system prepares the body for action, triggering the "fight or flight" response in stressful situations. It increases heart rate, dilates pupils, and redirects energy away from non-essential functions like digestion. The parasympathetic nervous system promotes a state of calm and energy conservation, triggering the "rest and digest" response. It lowers heart rate, constricts pupils, and stimulates digestion.
6. testosterone and thyroid hormone
7. beta cells
8. Adrenaline prepares the body for a 'fight or flight' response:
   Increased heart rate and blood pressure: Adrenaline causes the heart to beat faster and stronger, and it constricts blood vessels. This increases blood flow to muscles and vital organs, providing more oxygen and glucose for a quick energy boost.
   Increased respiration rate: Adrenaline makes breathing faster and deeper, which increases oxygen intake. More oxygen is then available for cellular respiration to produce the energy needed for a rapid response.
9. Antagonistic muscles are pairs of muscles that work in opposition to each other. One muscle, the agonist, contracts to cause a movement, while the other, the antagonist, relaxes. This coordinated action allows for controlled, smooth movement. For example, to bend the arm at the elbow, the biceps contracts (agonist) while the triceps relaxes (antagonist).
10. E = bone F = cartilage G = synovial fluid
11. The musculoskeletal system plays a l role in immunity through the bone marrow. Inside bones, red marrow is the site of haematopoiesis, the process of creating all blood cells, including white blood cells (leukocytes).
12. breasts = produce milk to nourish a newborn baby

uterus = organ where the developing foetus grows
ovaries = produce oestrogen and progesterone
vagina = muscular tube that holds the penis during intercourse

13. Testes: The testes are the primary male reproductive organs. Their main functions are to produce sperm, and to produce and secrete testosterone.
    Penis: The penis is the male organ for sexual intercourse and urination. During sexual arousal, it becomes erect, allowing for the delivery of semen into the female reproductive tract for fertilisation.

Pg 74 recap questions

1. Coronary heart disease (CHD) is a condition where the heart's blood supply is blocked or reduced. The underlying process is atherosclerosis.
2. Atherosclerosis is the buildup of fatty deposits, called plaque, on the inner walls of the arteries. This plaque buildup narrows the arteries which restricts or blocks blood flow, depriving the heart muscle of oxygen and nutrients.
3. Hypertension (high blood pressure) increases the risk of CHD by causing constant, forceful blood flow that can damage the inner lining of arteries, making them more susceptible to plaque buildup.
4. A heart attack occurs when a blood clot completely blocks a coronary artery, stopping blood flow and causing heart muscle tissue to die. It is a direct complication of CHD.
5. Heart failure is a condition where the heart cannot pump blood efficiently. CHD can cause heart failure because repeated damage from reduced blood flow weakens the heart muscle over time, making it unable to meet the body's demands.
6. Shortness of breath is a symptom of CHD because if the heart can't pump blood effectively, fluid can back up into the lungs, leading to difficulty breathing.
7. When the heart doesn't work properly, fluid can build up in the liver and stomach, which can cause nausea and loss of appetite.
8. CHD affects the cardiovascular system by narrowing arteries. This can then impact the respiratory system by causing fluid buildup in the lungs (shortness of breath) and the digestive system by causing nausea due to reduced blood flow and nerve signals.
9. A stroke occurs when blood flow to a part of the brain is interrupted, causing brain cells to die.
10. An ischaemic stroke is caused by a blood clot that blocks a blood vessel in the brain. A haemorrhagic stroke is caused by a burst blood vessel that bleeds into the surrounding brain tissue.
11. the primary effect of a stroke is damage to brain cells due to a lack of oxygen and nutrients, leading to a loss of function in the affected brain region.

12. The location of the brain damage determines the specific effects. For example, a stroke in the left hemisphere of the brain often affects the right side of the body and can cause speech and language problems (dysphasia).
13. Muscle weakness or paralysis. Speech and swallowing difficulties. Depression and mood swings. Memory loss or cognitive impairment.
14. These are common secondary effects because the stroke has damaged the brain's motor control centres, which are responsible for sending signals to the muscles and coordinating movement.
15. Dysphasia is a language disorder that can affect a person's ability to speak, read, write, or understand language. It is a common result of brain damage from a stroke.
16. Strokes can increase the risk of respiratory infections like pneumonia because they can cause difficulty swallowing (dysphagia). This can lead to food or drink accidentally entering the lungs, causing an infection.
17. COPD stands for Chronic Obstructive Pulmonary Disease. The three key characteristics are: chronic inflammation of the airways, airflow limitation due to airway narrowing, damage to the alveoli (air sacs).

Pg 74 revision quiz

1. Simple epithelial tissue has a single layer of cells, while compound (or stratified) epithelial tissue has multiple layers. Simple tissue is specialised for absorption and filtration, and compound tissue is adapted for protection.
2. The reactants of aerobic respiration are glucose and oxygen. The products are carbon dioxide, water, and a large amount of ATP
3. The coronary arteries supply the heart muscle itself with oxygen-rich blood and nutrients
4. Insulin lowers blood glucose by helping cells absorb glucose from the blood and signalling the liver to store it. Glucagon raises blood glucose by signalling the liver to break down stored glycogen and release glucose into the bloodstream.
5. T-cells are responsible for cell-mediated immunity, directly attacking infected cells. B-cells produce antibodies that target and neutralize specific pathogens in the adaptive immune response.
6. The large intestine's main functions are to absorb water and electrolytes from indigestible food matter and to pass waste material from the body.
7. In type 1 diabetes, the pancreas produces little to no insulin because the immune system destroys the insulin-producing cells. In type 2 diabetes, the body either doesn't produce enough insulin or can't use it effectively (insulin resistance).
8. Early symptoms of Alzheimer's include memory loss (especially of recent events), difficulty planning or solving problems, and confusion with time or place.

9. Bowel cancer can cause internal bleeding, which leads to chronic blood loss and iron-deficiency anaemia. This reduces the amount of oxygen-carrying red blood cells, forcing the heart to work harder, which can strain the cardiovascular system.
10. The two main categories of Acquired Brain Injury (ABI) are Traumatic Brain Injury, caused by an external force (e.g. a blow to the head), and Non-Traumatic Brain Injury, caused by an internal event (e.g. a stroke, tumour, or infection).
11. ABI can affect sensory functions by damaging the specific regions of the brain that process sensory information. For example, damage to the occipital lobe can cause vision problems, while damage to the temporal lobe can affect hearing.

Pg82 recap questions

1. The four main symptoms of asthma are wheezing, coughing, shortness of breath, and a feeling of chest tightness.
2. Genetic factors can predispose an individual to develop asthma, while environmental triggers (like allergens, smoke, or pollution) can cause the onset or worsening of symptoms.
3. allergens such as pollen, dust mites, and mould. Irritants such as cigarette smoke, air pollution, and strong odours (e.g. perfumes), respiratory infections and exercise.
4. Asthma causes the airways in the lungs to become inflamed and narrowed and also causes the muscles around the airways to tighten (bronchoconstriction). These changes restrict airflow, making it difficult to breathe.
5. During a severe asthma attack, symptoms can include severe shortness of breath, an inability to speak in full sentences, blue lips or nails (cyanosis), and a lack of wheezing as no air can move.
6. anxiety and depression, pneumonia and developmental delays in children
7. Asthma increases the risk of pneumonia because the inflammation and mucus buildup in the airways can make it easier for bacteria and viruses to take hold and cause an infection.
8. Asthma can lead to respiratory failure when the airways are so severely constricted and inflamed that the person can't get enough oxygen into their blood or remove enough carbon dioxide from it. If left untreated, this can be fatal.
9. Asthma can lead to respiratory failure when the airways are so severely constricted and inflamed that the person can't get enough oxygen into their blood or remove enough carbon dioxide from it. If left untreated, this can be fatal.
10. Severe asthma attacks can place a significant strain on the heart, leading to increased heart rate and blood pressure due to the body's struggle to get enough oxygen. Over time, poorly controlled asthma can contribute to high blood pressure and other cardiovascular problems.

11. Type 1 diabetes is an autoimmune disease where the body's immune system attacks and destroys the insulin-producing cells in the pancreas. Type 2 diabetes is caused by a combination of genetic and lifestyle factors, leading to insulin resistance and a gradual decline in insulin production.
12. Lifestyle risk factors for type 2 diabetes include obesity, a sedentary lifestyle, and a diet high in sugar and processed foods. Insulin resistance is a condition where the body's cells don't respond effectively to the hormone insulin.
13. Frequent urination due to the kidneys trying to remove excess sugar from the blood. Increased thirst, a result of the body becoming dehydrated from frequent urination. Increased hunger, as the body's cells can't absorb glucose for energy.
14. High blood sugar levels can damage the tiny blood vessels in the eyes. This can cause the lens to swell (blurred vision), lead to the formation of cloudy areas on the lens (cataracts), and damage the retina (diabetic retinopathy), potentially leading to blindness.
15. Cardiovascular disease (heart attacks, strokes)
    Kidney damage (nephropathy)
    Nerve damage (neuropathy)
    Diabetic retinopathy
    Foot problems leading to amputation
16. Diabetes increases the risk of heart disease and stroke because high blood sugar levels can damage blood vessels, leading to the accelerated buildup of fatty plaques (atherosclerosis). This narrows the arteries, restricting blood flow and raising the risk of clots, which can cause a heart attack or stroke.
17. High blood sugar levels can damage the small blood vessels that supply nerves with nutrients. This leads to neuropathy (nerve damage). The consequences, especially in the feet, include a loss of sensation, which makes a person more susceptible to injuries and infections that can lead to ulcers and, if untreated, amputation.
18. Renal system: High blood sugar can damage the kidneys' filtering units, leading to kidney disease.
    Nervous system: Diabetes can cause nerve damage throughout the body.
    Immune system: High blood sugar can weaken the immune response, making individuals more susceptible to infections.

pg 82 revision quiz

1. The three types of muscle tissue are:
   Skeletal muscle: Found attached to bones. Responsible for voluntary movements.
   Cardiac muscle: Found only in the heart; responsible for pumping blood. It's involuntary.

Smooth muscle: Found in the walls of internal organs (e.g. intestines, blood vessels). Responsible for involuntary movements like digestion.

2. Several factors influence Basal Metabolic Rate (BMR), including age, gender, genetics, body size (especially height and weight), body composition (muscle burns more calories than fat), and hormones (like thyroid hormones).
3. The diaphragm is a large, dome-shaped muscle at the base of the chest. When it contracts and flattens, it increases the volume of the chest cavity, causing air to rush in during inhalation. When it relaxes, it returns to its dome shape, pushing air out during exhalation.
4. Insulin and glucagon are hormones that regulate blood glucose. When blood sugar is high, the pancreas releases insulin to help cells absorb glucose, lowering the level. When blood sugar is low, the pancreas releases glucagon to signal the liver to release stored glucose, raising the level.
5. Immunological memory is the ability of the immune system to remember a specific pathogen after a first encounter. The next time the same pathogen is encountered, the immune system can mount a much faster and stronger response, often preventing the person from getting sick.
6. Testosterone is produced primarily in the testes in males
7. To reduce the risk of developing coronary heart disease (CHD), a person can:
   Maintain a healthy weight.
   Eat a balanced diet low in saturated fats and processed foods.
   Engage in regular exercise.
   Quit smoking.
8. Exercise and Asthma
   Exercise can be a trigger for asthma symptoms in some people (exercise-induced asthma). However, it can also improve lung function and reduce symptoms over time. People with asthma can manage exercise by using their prescribed reliever inhaler before physical activity, warming up thoroughly, and avoiding triggers, manage stress and control blood pressure.
9. Common early symptoms of bowel cancer include:
   A persistent change in bowel habits (e.g. more frequent or looser stools).
   Blood in the stool or rectal bleeding.
   Abdominal pain or a lump in the abdomen.
10. Bowel cancer can cause a partial or complete blockage of the intestine, leading to constipation, a change in stool consistency, and abdominal pain. It can also cause chronic bleeding, leading to anaemia and fatigue.

Pg86 recap questions

1. Two genetic factors that can increase a woman's risk of developing breast cancer are inherited mutations in the BRCA1 and BRCA2 genes.
2. Alcohol consumption: Alcohol can increase blood levels of oestrogen and other hormones associated with hormone-receptor-positive breast cancer.
   Obesity: Being overweight or obese after menopause can increase breast cancer risk as fat tissue produces excess oestrogen.
3. Radiation: Exposure to ionising radiation, such as from X-rays or radiation therapy for other cancers, can increase the risk of breast cancer.
   Oestrogen: prolonged exposure to high levels of oestrogen can increase the risk of breast cancer.
4. Four primary effects of breast cancer are a new lump or swelling in the breast or underarm; a change in the size or shape of the breast; dimpling or puckering of the breast skin; and changes to the nipple, such as it turning inward.
5. Metastasis is the process by which cancer cells break away from the original tumour, travel through the bloodstream or lymphatic system, and form new tumours in other parts of the body.
6. Bones: Metastasis to bones can cause pain, fractures, and high calcium levels in the blood.
   Lungs: Spreading to the lungs can lead to chronic cough, shortness of breath, and chest pain.
   Liver: Spreading to the liver can cause jaundice, abdominal pain, and fluid retention.
   Brain: Spreading to the brain can cause headaches, seizures, and neurological problems.
7. When cancer metastasises to a vital organ like the liver or lungs, the rapidly growing tumour cells can disrupt the organ's normal function, causing it to fail. For example, extensive cancer in the liver can prevent it from filtering toxins, leading to liver failure.
8. Some individuals may have a genetic predisposition to bowel cancer. This means that they inherit genes that increase their risk of developing the disease.
9. Three lifestyle factors associated with an increased risk of bowel cancer are a diet low in fibre and high in red and processed meats, a sedentary lifestyle, and high alcohol consumption.
10. A pre-existing medical condition of the digestive system that can increase the risk of bowel cancer is Crohn's disease or ulcerative colitis, which are both types of inflammatory bowel disease (IBD).
11. Three primary effects of bowel cancer are a persistent change in bowel habits (e.g. more frequent or looser stools), rectal bleeding or blood in the stool, and persistent abdominal pain or discomfort.

12. Bowel cancer can cause chronic, internal bleeding. This can lead to iron-deficiency anaemia, a condition where the blood lacks enough healthy red blood cells to carry adequate oxygen, placing a strain on the cardiovascular system.
13. Bowel cancer can have a secondary effect on the musculoskeletal system because the chronic bleeding and resulting anaemia can lead to fatigue and general weakness, making it difficult for a person to maintain muscle strength and engage in physical activity.
14. The most significant lifestyle factor that dramatically increases the risk of developing lung cancer is active smoking.
15. Two environmental factors that can increase the risk of lung cancer are exposure to radon gas and exposure to asbestos fibres.
16. One of the most common primary effects of lung cancer is a persistent cough that does not go away.
17. Individuals with lung cancer may experience recurrent chest infections because the tumour can obstruct or narrow the airways, making it difficult for the lungs to clear mucus and bacteria, which can then lead to infections like pneumonia.
18. Lung cancer can cause an increase in substances in the blood that can make it "stickier," which can increase the risk of blood clots forming in the legs or lungs. It can also cause chronic bleeding in the airways, leading to anaemia.
19. Digestive system: Tumours in the lungs can release substances that cause a loss of appetite, leading to weight loss and malnutrition.
    Musculoskeletal system: Lung cancer can lead to muscle wasting, weakness, and fatigue due to the body's increased metabolic demands and the effects of chemotherapy.
20. Three organs commonly affected by the spread of lung cancer are the brain, bones, and liver. The consequences of this spread include neurological symptoms and seizures (brain), pain and fractures (bones), and organ failure (liver).

pg87 revision quiz

1. Bone: Provides support and protection for organs.
   Cartilage: Offers flexibility and reduces friction at joints.
   Blood: Transports nutrients, oxygen, hormones, and waste throughout the body.
2. Glial cells, or neuroglia, support and protect neurons. They provide nutrients, remove waste, and maintain a stable environment for nerve function.
3. mitochondria
4. lactic acid
5. negative feedback loops.

6. When the body is too hot, it regulates temperature by sweating and vasodilation (widening of blood vessels near the skin) to release heat.
7. Insulin (produced in the pancreas) and glucagon (produced in the pancreas) regulate blood sugar levels.
8. Osmoregulation is the process of regulating the water and salt balance in the body. The kidneys play a key role in this process.
9. The alveoli are tiny air sacs in the lungs where gas exchange occurs.
10. During gas exchange, oxygen diffuses from the alveoli into the blood, and carbon dioxide diffuses from the blood into the alveoli.
11. The diaphragm and intercostal muscles (muscles between the ribs) are involved in inhalation.
12. The hormones Antidiuretic Hormone (ADH) and Aldosterone regulate water reabsorption in the kidneys.
13. Antibodies are proteins that identify and neutralise foreign objects like bacteria and viruses.
14. Lymph nodes filter lymph fluid, trapping and destroying pathogens and damaged cells.
15. Lymphatic capillaries collect excess fluid from body tissues, forming lymph, and transport it to larger vessels.
16. The small intestine is where most digestion and absorption of nutrients occur.
17. The liver produces bile which is stored in the gallbladder. The gallbladder then releases bile into the small intestine to break down fats.
18. The ovaries produce eggs and female hormones like oestrogen and progesterone.
19. The testes produce sperm and male hormones like testosterone.
20. Oestrogen promotes the growth of the uterine lining, while progesterone maintains it for a potential pregnancy.
21. Coronary arteries
22. Atherosclerosis is the hardening and narrowing of arteries due to plaque buildup, which restricts blood flow and can lead to CHD.
23. The two main categories of stroke are ischemic (caused by a blood clot blocking an artery) and haemorrhagic (caused by a blood vessel rupture).
24. A stroke in the left hemisphere often affects speech, language, and logical thought, while a stroke in the right hemisphere can impact spatial awareness, creativity, and non-verbal communication.
25. Typical risk factors for type 2 diabetes include obesity, sedentary lifestyle, genetics, and age.
26. Dementia can cause significant changes in mood, behaviour, and personality, leading to irritability, apathy, depression, and loss of inhibition.
27. Acquired Brain Injury (ABI) can impair motor skills and coordination through muscle weakness, tremors, or balance issues.

28. A stroke can affect the musculoskeletal system by causing muscle weakness or paralysis on one side of the body (hemiplegia), leading to difficulty with movement and coordination.

Pg88 assessment practice

1. Coronary heart disease (CHD) is primarily caused by atherosclerosis, which is the buildup of fatty deposits and cholesterol inside the walls of the coronary arteries. This process can be accelerated by lifestyle factors like smoking, a poor diet, and a lack of exercise. Other risk factors include high blood pressure, high cholesterol, and diabetes.
2. Atherosclerosis is the underlying process that leads to CHD. It begins when the inner lining of the coronary arteries is damaged, often by high blood pressure, smoking, or high cholesterol. This damage allows fats, cholesterol, and other substances to accumulate, forming a substance called plaque. As the plaque grows, it narrows the arteries, reducing blood flow to the heart muscle. This can cause chest pain (angina) during exertion. If a plaque ruptures, a blood clot can form, which may completely block the artery, leading to a heart attack.
3. Heart failure: The heart muscle, starved of oxygen, becomes weakened and less efficient at pumping blood. This can cause blood to back up, leading to fluid accumulation in the lungs and other parts of the body.
   Arrhythmia: Damage to the heart muscle can disrupt the electrical signals that regulate the heartbeat, causing an abnormal heart rhythm (arrhythmia), which can be life-threatening.
4. Ischaemic stroke is the most common type and is caused by a blood clot that blocks an artery supplying blood to the brain. This stops oxygen and nutrients from reaching brain cells, causing them to die.
   Haemorrhagic stroke is less common and is caused by a blood vessel bursting in the brain, leading to bleeding. The bleeding damages brain cells and creates pressure on the brain tissue, causing further damage.
5. A stroke damages the nervous system by killing brain cells due to a lack of oxygen (ischaemic) or from direct damage and pressure (haemorrhagic). Since different parts of the brain control specific functions, the effects of a stroke depend on its location. This can lead to physical disabilities (e.g. paralysis), cognitive impairments (e.g. memory loss), and communication difficulties (e.g. dysphasia).
6. The term "chronic" means the condition is long-lasting and recurrent or progresses over a long period. Unlike an acute illness that comes on suddenly and is short-lived, a chronic condition like COPD typically cannot be cured and requires ongoing management.

7. The two main causes of COPD are smoking and long-term exposure to harmful dust or fumes at work or in the environment.
8. Emphysema is a type of COPD that results in reduced gas exchange because it destroys the walls of the alveoli. The alveoli are the tiny air sacs in the lungs where oxygen and carbon dioxide are exchanged with the blood. The destruction of these walls causes smaller air sacs to merge into larger, less efficient air spaces, which significantly reduces the total surface area available for gas exchange. This makes it harder for the body to absorb oxygen and release carbon dioxide, leading to shortness of breath and other respiratory issues.
9. The main impact of COPD on the digestive system is weight loss and malnutrition. The chronic coughing due to COPD can weaken the muscles that control the opening between the oesophagus and the stomach. This can lead to a condition known as gastroesophageal reflux disease (GERD), where stomach acid can move into the oesophagus causing heartburn and damage to the oesophagus.
   COPD causes lower levels of oxygen in the blood, which causes the heart rate to increase. Overtime, this can lead to a condition called pulmonary hypertension (high blood pressure in the pulmonary arteries). The long-term inflammation caused by COPD can also cause the development of atherosclerosis, a condition where plaque builds up inside the arteries, restricting blood flow to the heart and the brain. This increases the risk of cardiovascular disease like coronary artery disease, heart attack and strokes
10. Allergens: Substances like pollen, dust mites, and mould can trigger an allergic response.
    Irritants: Airborne pollutants, tobacco smoke, strong smells from perfumes or cleaning products, and cold air can irritate the airways.
    Physical Exertion: Intense exercise or physical activity can trigger asthma symptoms in some people, a condition known as exercise-induced bronchoconstriction.
11. Bronchoconstriction: The muscles surrounding the airways tighten, or constrict, which makes the airways narrower and restricts airflow. This leads to symptoms like wheezing and a feeling of chest tightness.
    Inflammation: The inner lining of the airways becomes swollen and inflamed in response to a trigger. This swelling, along with increased mucus production, further clogs the airways, making it even more difficult to breathe and leading to a persistent cough and shortness of breath.
12. Type 1 diabetes is an autoimmune disease where the body's immune system attacks and destroys the insulin-producing cells in the pancreas. Treatment is daily insulin injections. Type 2 diabetes is caused by a combination of genetic and lifestyle factors, leading to insulin resistance and a gradual decline in insulin production. Type 2 can often be managed with a healthy diet, regular exercise and oral medication.

13. Type 2 diabetes is considered a lifestyle disease because its development is strongly linked to modifiable risk factors related to daily habits and choices.
    Diet: Diets high in processed foods, unhealthy fats, and sugars contribute to obesity and insulin resistance.
    Physical Inactivity: A lack of regular exercise is a major risk factor, as physical activity helps the body's cells respond more effectively to insulin.
    Obesity: Carrying excess weight, particularly around the abdomen, is a primary cause of insulin resistance. Maintaining a healthy weight through diet and exercise can significantly reduce the risk of developing the condition.
14. Type 1 diabetes, an autoimmune disorder, can have a severe impact on many of the body's other systems, mainly because of consistently high blood glucose levels. Over time, this can lead to a range of complications, affecting the cardiovascular, nervous, and urinary systems.
    Cardiovascular System:
    - Atherosclerosis and Heart Disease: High blood glucose levels over a long period can damage the walls of the blood vessels, leading to the buildup of fatty deposits, a process called atherosclerosis. This can narrow and harden the arteries, increasing the risk of coronary artery disease, heart attack, and stroke. People with Type 1 diabetes are at a much higher risk of developing these conditions and at a younger age.
    - High Blood Pressure: Diabetes often contributes to hypertension (high blood pressure), forcing the heart to work harder to pump blood throughout the body. This strains the heart and can further damage blood vessels.

    Nervous System:

    - Diabetic Neuropathy: High blood sugar can cause nerve damage, a condition known as diabetic neuropathy. This most commonly affects the nerves in the legs and feet, leading to symptoms like tingling, numbness, pain, or a complete loss of feeling. This can make a person unaware of injuries, increasing the risk of ulcers and infections.
    - Autonomic Neuropathy: Nerve damage can also affect the autonomic nervous system, which controls involuntary bodily functions. This can lead to issues with the digestive system (gastroparesis), urinary tract (urinary incontinence), and even the heart (e.g. changes in heart rate).

    Urinary and Renal System:

    - Diabetic Nephropathy: The kidneys' main function is to filter waste products from the blood. High blood glucose levels can damage the tiny blood vessels within the kidneys' filtering units (glomeruli), a condition called diabetic nephropathy. Over time, this damage can lead to a decline in kidney function and, eventually, kidney failure.

- Increased Risk of Infections: High blood sugar can also weaken the immune system, making a person with diabetes more susceptible to infections, including urinary tract infections (UTIs) and yeast infections.

Other Body Systems:

- Vision: High blood sugar can damage the delicate blood vessels in the retina, a condition called diabetic retinopathy, which can lead to vision loss or even blindness. It can also increase the risk of developing cataracts at a younger age.

15. Memory Loss: Dementia primarily affects the brain's ability to store and recall memories, especially recent ones. This occurs because the disease damages or destroys brain cells in areas responsible for memory formation.
    Cognitive Decline: There is a progressive decline in cognitive functions beyond memory, including reasoning, problem-solving, and judgment. This is due to the widespread death of brain cells in areas responsible for higher-level thinking.
    Communication Issues: Individuals with dementia often struggle with language. They may have difficulty finding the right words, understanding conversations, or expressing their thoughts clearly. This is a result of damage to the parts of the brain that process and produce language.
16. A traumatic brain injury (TBI) is caused by an external force, such as a blow to the head or a sudden, violent jolt, that causes the brain to move inside the skull.
    A non-traumatic brain injury (NTBI) is caused by internal factors that disrupt the brain's normal function, such as a stroke, lack of oxygen (hypoxia), or a brain tumour.
17. A brain injury can cause significant changes in personality because it damages the parts of the brain responsible for regulating emotions, social behaviour, and judgment. The frontal lobe is crucial for personality. Damage to this area can lead to a loss of inhibition, increased impulsivity, mood swings, apathy, and a general change in the person's character and social behaviour.
18. Genetic: Inherited genetic mutations, such as those in the BRCA1 and BRCA2 genes, significantly increase a person's risk of developing breast cancer. These genes are involved in DNA repair, and when they are mutated, damaged cells are more likely to become cancerous.
    Lifestyle: Lifestyle choices like a diet high in processed foods and saturated fats, lack of physical activity, excessive alcohol consumption, and smoking can increase risk. These factors contribute to hormonal imbalances and inflammation, both of which can promote the growth of cancerous cells.
    Environmental: Exposure to certain chemicals and radiation, particularly early in life, can also contribute to the development of breast cancer by damaging DNA and increasing the risk of mutations.
19. Metastatic cancer is cancer that has spread from its original location to other parts of the body. This occurs when cancerous cells break away from the primary tumour,

travel through the bloodstream or lymphatic system, and form new tumours in distant organs or tissues.

20. Changes in faeces: This may include changes in the consistency of stools, such as becoming thicker, thinner, or more watery.
    Changes in Bowel Habits: The presence of a tumour can alter how the bowel functions, causing a change in frequency or consistency of bowel movements, such as persistent diarrhoea or constipation.
    Bleeding from the anus/blood in stool: Blood in the stool is a serious symptom of bowel cancer. The bleeding can be bright red, or dark and tarry.
21. The body may experience a loss of bone and muscle mass due to the cancer itself, the effects of treatment, or changes in diet and activity levels. This can lead to weakness, fatigue, and an increased risk of fractures.
22. Digestive System:
    - Reduced Appetite: Cancer and its treatments, such as chemotherapy and radiation, can cause nausea, vomiting, and changes in taste and smell, leading to a loss of appetite and a reduced desire to eat.
    - Increased Energy Needs: The body requires more energy to fight cancer cells and to repair tissue damaged by treatment. This increased metabolic rate can result in weight loss even if a person eats normally.
    - Malnutrition: A combination of poor appetite and increased energy expenditure can lead to malnutrition. This can further weaken the body, impairing its ability to fight the disease and tolerate treatment. It also directly impacts the digestive system's function, as it lacks the necessary nutrients to repair itself and maintain proper function.

    Other Body Systems:

    - Cardiovascular System: Lung cancer can directly impact the cardiovascular system. A tumour in the lungs can put pressure on nearby blood vessels, leading to a buildup of fluid, which can affect blood flow to the heart. The inflammation caused by cancer can also increase the risk of blood clots.
    - Musculoskeletal System: The weight loss and malnutrition associated with cancer often leads to severe muscle wasting and weakness.
    - Immune System: Cancer and chemotherapy weaken the immune system, making it harder for the body to fight off infections. A person with lung cancer may be more susceptible to infections like pneumonia, which can worsen respiratory symptoms and general health.