S2 Biology – My Body & Reproduction

Practice Test Pack (2 Practice + 2 Challenge)

Instructions (for pupils) *- Answer* ***all*** *questions. -* ***No diagrams are provided****. Where asked to label,* ***draw a simple sketch*** *(stick-figure style is fine) and label clearly. - Total marks for each test:* ***20****.*

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PRACTICE TEST 1 (20 marks)

Name: _____ **Date:** _____

Part 1 — Multiple Choice (5 marks)

Circle **A**, **B**, **C** or **D**.

1. The site of gas exchange in the lungs is the
    - A trachea
    - B bronchi
    - C air sacs (alveoli)
    - D diaphragm
2. Which statement about arteries is correct?
    - A Arteries carry blood back to the heart
    - B Arteries have thick muscular walls
    - C Arteries have valves
    - D Arteries carry only deoxygenated blood
3. Which organ produces bile?
    - A pancreas
    - B stomach
    - C liver
    - D large intestine
4. Which gas turns limewater cloudy?
    - A oxygen
    - B nitrogen
    - C carbon dioxide
    - D hydrogen
5. Which waste product is removed from the body by the lungs?
    - A urea
    - B carbon dioxide
    - C faeces
    - D bile

Part 2 — Extended Response (15 marks)

1. ***Breathing system***

   *(a) Name **three** structures of the breathing system. Choose from: trachea, bronchus, bronchioles, air sacs (alveoli), diaphragm (3)*

   *(b) Describe what happens when you **breathe in**. Include the diaphragm and rib cage. (2)*

2. ***Circulatory system***

   (a) State the function of the heart. (1)

   *(b) Put these stages of blood flow in the correct order, starting at the **right atrium**.*

   lungs, right ventricle, pulmonary artery, left atrium, left ventricle, body, right atrium (2)

   *(c) Give **one** feature of an artery and **one** feature of a vein that helps each do its job. (2)*

3. ***Digestion and excretion***

   *(a) State **two** roles of the stomach in digestion. (2)*

   *(b) Name **three** excretory organs and state what each removes from the body. (3)*

SELF-MARKING — PRACTICE TEST 1 (Acceptable points)

Part 1 — Multiple Choice (5)

1 C 2 B 3 C 4 C 5 B

Part 2 — Extended Response (15)

1(a) Any **three** (1 each): trachea / bronchus / bronchioles / air sacs (alveoli) / diaphragm

1(b) Any **two** clear points (1 each): - diaphragm contracts and moves down / flattens - intercostal muscles contract / rib cage moves up and out - chest volume increases - pressure decreases and air is drawn in

2(a) pumps blood around the body (to lungs and body) / moves blood to supply cells (1)

2(b) Right atrium → right ventricle → pulmonary artery → lungs → left atrium → left ventricle → body (2) - 2 marks: all correct and in order - 1 mark: one mistake only

2(c) Any **two** total (1 each), e.g. - artery: thick muscular wall / narrow channel / carries blood away from heart - vein: valves / wide channel / thinner wall / carries blood back to heart

3(a) Any **two** (1 each): - churns / mixes food - acid kills bacteria / germs - begins digestion using digestive juices (accept)

3(b) Any **three organ + waste** matches (1 each), e.g. - kidneys: urea in urine / excess water / excess salts - lungs: carbon dioxide (and water vapour) - skin: sweat (water + salts) - liver: breaks down toxins / makes urea - bladder: stores urine (accept if linked to urine)

PRACTICE TEST 2 (20 marks)

Name: _____ ***Date:*** _____

Part 1 — Multiple Choice (5 marks)

*Circle **A**, **B**, **C** or **D**.*

1. *Tendons connect*
    - *A bone to bone*
    - *B bone to muscle*
    - *C muscle to muscle*
    - *D muscle to organ*
2. *Which statement about veins is correct?*
    - *A Veins carry blood away from the heart*
    - *B Veins have valves to stop backflow*
    - *C Veins have the thickest muscular walls*
    - *D Veins always carry oxygenated blood*
3. *Where does most absorption of digested food happen?*
    - *A stomach*
    - *B small intestine*
    - *C oesophagus*
    - *D large intestine*
4. *Where are sperm produced?*
    - *A testes*
    - *B oviduct*
    - *C uterus*
    - *D bladder*
5. *Benedict's solution is used to test for*
    - *A starch*
    - *B fat*
    - *C sugar (glucose)*
    - *D protein*

Part 2 — Extended Response (15 marks)

1. ***Skeleton and movement***

   *(a) State **three** functions of the skeleton. (3)*

   (b) Define the terms:

   - *tendon (1)*
   - *ligament (1)*

2. ***Food tests and digestion*** *A pupil tested two foods.*

Food	*Iodine test (starch)*	*Benedict's test (sugar)*
X	*turned blue-black*	*stayed blue*
Y	*stayed brown*	*turned orange*

   (a) What nutrient is present in food X? (1)

   (b) What nutrient is present in food Y? (1)

   (c) Explain why food molecules must be broken down before absorption. (3)

3. ***Reproduction (no diagram provided)***

   *(a) **Draw a simple sketch** of the male reproductive system and label **two** of these: testes, sperm duct, penis, urethra (2)*

   *(b) **Draw a simple sketch** of the female reproductive system and label **two** of these: ovary, oviduct, uterus, cervix, vagina (2)*

   (c) Describe fertilisation. (1)

SELF-MARKING — PRACTICE TEST 2 (Acceptable points)

Part 1 — Multiple Choice (5)

1 B 2 B 3 B 4 A 5 C

Part 2 — Extended Response (15)

*1(a) Any **three** (1 each): support / shape / protection / movement / muscle attachment / production of blood cells*

*1(b) - tendon: connects **muscle to bone** (1) - ligament: connects **bone to bone** (1)*

*2(a) starch (1) 2(b) sugar / glucose (1) 2(c) Any **three** linked points (1 each): - large food molecules are too big to pass through intestine wall - digestion breaks them into smaller molecules - small molecules must be **soluble** - then they can be absorbed into the blood through the small intestine wall*

*3(a) Any **two correct labels** from list (1 each). Drawing not marked, labels are. 3(b) Any **two correct labels** from list (1 each). Drawing not marked, labels are. 3(c) fusion of the nuclei of sperm and egg (to form a zygote) (1)*

CHALLENGE TEST 1 (20 marks)

Name: _____ ***Date:*** _____

Part 1 — Multiple Choice (5 marks)

*Circle **A**, **B**, **C** or **D**.*

1. *During breathing in, the pressure inside the chest*
    - *A increases*
    - *B decreases*
    - *C stays the same*
    - *D becomes zero*
2. *The vessel that carries oxygenated blood from the lungs to the heart is the*
    - *A pulmonary artery*
    - *B pulmonary vein*
    - *C vena cava*
    - *D aorta*
3. *Which blood vessel has a wall that is **one cell thick**?*
    - *A artery*
    - *B vein*
    - *C capillary*
    - *D aorta*
4. *If a female ovary produces **1 egg every month**, how many eggs are produced in **7 years**?*
    - *A 28*
    - *B 56*
    - *C 84*
    - *D 120*
5. *Which change would most improve the reliability of an investigation?*
    - *A use a larger ruler*
    - *B repeat and calculate an average*
    - *C write results in pen*
    - *D do it in a darker room*

Part 2 — Structured & Data Handling (15 marks)

1. **Linking systems** Explain why the breathing system and circulatory system must work together to keep cells alive. (3)

2. **Data: heart rate and exercise** A pupil measured heart rate before jogging, straight after, and 3 minutes after stopping.

Trial	Before (beats/min)	Straight after (beats/min)	3 min after (beats/min)
1	68	124	88
2	72	128	92
3	70	120	90

   (a) Calculate the **average** heart rate before jogging. (1)

   (b) Calculate the **average** heart rate straight after jogging. (1)

   (c) Calculate the **average** heart rate 3 minutes after stopping. (1)

   (d) State one valid conclusion from the results. (1)

3. **Graph skills: blood vessel wall thickness** Use the results below.

Blood vessel	Average wall thickness (μm)
Artery	980
Vein	520

   (a) On graph paper, draw an appropriate **bar chart** for the results. (3)

   (b) Predict a sensible wall thickness for a capillary and give a reason for your choice. (2)

4. **Pregnancy: structures and function** State the function of each:

   - placenta (1)
   - umbilical cord (1)
   - amniotic sac/fluid (1)

SELF-MARKING — CHALLENGE TEST 1 (Acceptable points)

Part 1 — Multiple Choice (5)

1 B 2 B 3 C 4 C (1 per month → 12 per year → 84 in 7 years) 5 B

Part 2 — Structured & Data Handling (15)

1 Any **three** linked points (1 each): - breathing brings oxygen into air sacs and removes carbon dioxide - oxygen diffuses into blood at air sacs; carbon dioxide diffuses out - circulatory system transports oxygen to cells for respiration - respiration releases energy needed for life processes - circulatory system carries carbon dioxide back to lungs for removal

2(a) (68 + 72 + 70) / 3 = 210 / 3 = **70** beats/min (1) 2(b) (124 + 128 + 120) / 3 = 372 / 3 = **124** beats/min (1) 2(c) (88 + 92 + 90) / 3 = 270 / 3 = **90** beats/min (1) 2(d) Any one (1): heart rate increases with exercise / heart rate starts to return towards normal after stopping

3(a) 3 marks: - axes labelled with quantity + unit (μm) (1) - sensible scale (1) - bars plotted accurately (1)

3(b) 2 marks: - a value **much smaller than a vein** (e.g. ~1–10 μm; accept any value clearly far less than 520 μm) (1) - reason: capillaries have **very thin walls (one cell thick)** so substances can diffuse in/out quickly (1)

4 (1 each) - placenta: exchange of oxygen/nutrients to baby and removal of wastes (accept "allows exchange between mother and baby") - umbilical cord: connects baby to placenta / carries blood to and from placenta - amniotic sac/fluid: cushions/protects baby (shock absorber) / keeps a stable environment

CHALLENGE TEST 2 (20 marks)

Name: _____ ***Date:*** _____

Part 1 — Multiple Choice (5 marks)

*Circle **A**, **B**, **C** or **D**.*

1. *Which part of the heart pumps blood to the lungs?*
    - *A left atrium*
    - *B left ventricle*
    - *C right ventricle*
    - *D right atrium*
2. *Which statement about alveoli (air sacs) is correct?*
    - *A they have thick dry walls*
    - *B they have a small surface area*
    - *C they are surrounded by capillaries*
    - *D they stop the diaphragm moving*
3. *Which is the best definition of excretion?*
    - *A removing undigested food*
    - *B removing waste made by the body*
    - *C digesting food*
    - *D taking in oxygen*
4. *Fertilisation is*
    - *A the release of an egg*
    - *B the fusion of sperm and egg nuclei*
    - *C the baby growing bigger*
    - *D the egg leaving the uterus*
5. *In an investigation, which change improves reliability the most?*
    - *A use a stopwatch instead of a phone timer*
    - *B repeat trials and calculate an average*
    - *C use a different coloured pen*
    - *D write the aim at the top*

Part 2 — Application & Evaluation (15 marks)

1. ***"Urine test" (Benedict's) — interpreting results*** *A pupil tests three "urine samples" with Benedict's solution and hot water.*

Sample	*Colour after heating*	*What does it show?*
A	*stayed blue*	
B	*green*	
C	*orange*	

   *(a) Complete the table by stating what each result shows about **sugar (glucose)**. (3)*

   *(b) Suggest **one** improvement to make the investigation more reliable or accurate. (1)*

2. ***Digestive system: journey + function***

   (a) Put these in the correct order: mouth, stomach, oesophagus, small intestine, large intestine (2)

   *(b) State one function for **three** of the organs above. (3)*

3. ***Sex cells: structure and function***

   (a) State two adaptations of a sperm cell and how each helps it reach/enter the egg. (2)

   (b) State two adaptations of an egg cell and how each helps early development/fertilisation. (2)

4. ***Pregnancy advice (application)*** *Choose **one** risk during pregnancy (e.g. smoking, alcohol, drugs, poor diet). Explain how it could harm the developing baby **and** one way to reduce the risk. (1 + 1)*

SELF-MARKING — CHALLENGE TEST 2 (Acceptable points)

Part 1 — Multiple Choice (5)

1 C 2 C 3 B 4 B 5 B

Part 2 — Application & Evaluation (15)

1(a) (1 each) - A: no glucose / negative result - B: small amount of glucose (low sugar) - C: lots of glucose (high sugar)

*1(b) Any **one** (1): - repeat tests and average - keep same volume of Benedict's and sample each time - use a water bath at a controlled temperature - heat for the same amount of time - use a colour chart to compare results*

2(a) mouth → oesophagus → stomach → small intestine → large intestine (2) - 2 marks: all correct - 1 mark: one mistake only

*2(b) Any **three organ + function** matches (1 each), e.g. - mouth: chewing / saliva starts digestion - oesophagus: carries food to stomach - stomach: churns food / acid kills bacteria - small intestine: absorbs digested nutrients into blood - large intestine: absorbs water*

*3(a) Any **two**, each with how it helps (1 each): - tail: swims to egg - middle: provides energy to swim - enzymes/chemicals in head: help break through egg outer layer - nucleus: carries DNA (accept if linked to fertilisation)*

*3(b) Any **two**, each with how it helps (1 each): - food store: energy for early development - nucleus: DNA - large cell / protective outer layer (accept): helps fertilisation and protection*

4 (2 marks) - 1 mark: explains harm (e.g. reduced oxygen → low birth weight; alcohol affects brain; drugs affect development; poor diet slows growth) - 1 mark: reduces risk (stop/avoid; support; healthy balanced diet; medical advice)