



NEW ZEALAND QUALIFICATIONS AUTHORITY
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Level 1, 2004

Human Biology

Describe how humans respond to pathogens (90176)

Describe maintenance of normal body functioning (90177)

**Describe functioning of human circulatory,
respiratory and excretory systems (90178)**

Describe functioning of the human reproductive system (90179)

National Statistics

Assessment Report

Assessment Schedule

Human Biology, Level 1, 2004

General Comments

Candidates gaining Achievement, understood what to do from the key words, for example 'describe', outlined in the standard, and from the key words in the questions. They followed the concepts of describe, explain or discuss, read the questions carefully, and took clues from the wording. They were aware of the key concepts and terms, and showed a good knowledge of basic concepts, as outlined in the standard.

Human Biology: Describe how humans respond to pathogens (90176)

National Statistics

| Number of Results | Percentage | | | |
|-------------------|--------------|----------|-------|------------|
| | Not Achieved | Achieved | Merit | Excellence |
| 2,304 | 42.5% | 46.1% | 6.8% | 4.6% |

Assessment Report

Candidates who gained Achievement, read the questions carefully, and used clues and information from the questions and diagrams in order to answer. They were able to write detailed and concise descriptions when required, and to apply their knowledge to interpret unfamiliar information.

These candidates recognised the significance of information in Questions One and Two, and the relationship they have to each other. They recognised key words and could distinguish between them. For example, passive and active immunity. They also understood the role antibodies play in relation to pathogens and how they are made.

Candidates who gained Achievement with Merit or Achievement with Excellence, showed a greater depth of knowledge, and were able to link their ideas together.

Assessment Schedule

Human Biology: Describe how humans respond to pathogens (90176)

Evidence Statement

| Question | Evidence Contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|---|--|---|
| 1(a) | <p>Describe passive immunity:</p> <p>Eg the body has received a (vaccine / injection) of ready-made antibodies/antitoxin.</p> | | |
| 1(b) | <p>Describes lack of antibodies:</p> <p>One of: Eg fewer antibodies present / body has run out of antibodies / antibodies have broken down. Or antibodies have limited life and 'booster' needed to keep vaccine working.</p> | <p>Explains why vaccine is needed:</p> <p>One of: Eg fewer antibodies present / body has run out of antibodies / antibodies have broken down.</p> <p>Linked to: vaccine provides new source of ready-made antibodies / more antibodies.</p> | |
| 1 (c) | <p>Answer identifies/describes:</p> <p>Eg the person gets the virus/ disease/chicken pox, and can't get it again/ becomes immune to it. OR Make antibodies for chicken pox.</p> | <p>Answer describes active immunity and explains how it occurs.</p> <p>Eg the person gets the virus/ disease/chicken pox and becomes (gains) immune as the body makes antibodies in response to disease/ pathogen/ virus.</p> | |
| 1(d) | <p>Describes/identifies role of lymphocyte</p> <p>Produce/make antibodies.</p> | | |
| 1(e) | <p>Describe the role of antibodies</p> <p>Eg antibodies made in response to chicken pox / virus / antigens</p> <p>NOT antibodies KILL virus.</p> | <p>Identify the role of antibodies and explain their role in gaining immunity</p> <p>Eg antibodies are produced in response to chicken pox / virus / antigens.</p> <p>Linked to: one idea of</p> <p>antibodies make antigens harmless/ weak OR antibodies clump antigens OR antibodies neutralize antigens OR phagocytes engulf clumped/ harmless/ weakened antigens. OR memory cells made/ can make antibodies again.</p> | <p>Link biological ideas of:</p> <p>Any two ideas of:</p> <ul style="list-style-type: none"> • antibodies are specific • antibodies clump/weaken antigens to be engulfed by phagocytes • the body makes antibodies faster to prevent further suffering • body immune system gains memory cells for chicken pox. |

| Question | Evidence Contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|--|--|---|
| 2(a) | <p>Describe role of mucus/cilia:</p> <p>One of:</p> <ul style="list-style-type: none"> • pathogens stuck in mucus • cilia trap pathogens • saliva has enzyme to destroy pathogen • saliva traps pathogen • natural bacterial population in mouth prevent pathogen entry. | <p>Explains how mucus and cilia work together:</p> <p>Cilia move/push mucus and pathogens up towards nose/nasal cavity to be removed (by sneezing)</p> <p>OR</p> <p>Saliva has enzyme <u>lysozyme</u> that destroys bacteria</p> <p>OR</p> <p>Pathogens bound by saliva and carried to stomach for acid to destroy pathogens.</p> | |
| 2(b) | <p>Describes one of:</p> <p>Eg</p> <ul style="list-style-type: none"> • use different knives/boards for cutting/handling chicken and salads • wash hands before food handling • any idea of improving hygiene • storing food properly (eg refrigerate, cover) • cook food properly • antibiotics • isolation of infected person. | | |
| 2(c) | <p>Gives any two of:</p> <p>Diarrhoea/ stomach cramps/ vomiting/ nausea/ fever/ headaches/feeling dizzy/ weakness.</p> | | |
| 2(d) | <p>Describes one of:</p> <ul style="list-style-type: none"> • stomach acids couldn't kill bacteria • bacteria reproduce too quickly • bacteria resistant to stomach acid • antibody production is too slow/ haven't made any antibodies yet. | <p>Explanation of:</p> <ul style="list-style-type: none"> • stomach acids couldn't kill bacteria • bacteria reproduce too quickly • bacteria resistant to stomach acid. <p>Is linked to</p> <ul style="list-style-type: none"> • antibody production is too slow. | <p>Link biological ideas of:</p> <p>Any two of:</p> <ul style="list-style-type: none"> • stomach acids couldn't stop Salmonella / pathogen/ bacteria • high bacteria toxins level/ high bacteria numbers cause food poisoning symptoms • antibodies take time to fight pathogen • lymphocytes take time to make antibodies. |

Judgement Statement

Achievement

Total of **FIVE** questions answered at Achievement level.

$5 \times A$

Merit

Achievement plus **THREE** questions at Merit level (or higher).

$3 \times M + 5 \times A$

Excellence

Merit plus **ONE** question at Excellence level.

$1 \times E + 3 \times M + 5 \times A$

Human Biology: Describe maintenance of normal body functioning (90177)**National Statistics**

| Number of Results | Percentage | | | |
|-------------------|--------------|----------|-------|------------|
| | Not Achieved | Achieved | Merit | Excellence |
| 1,492 | 56.4% | 26.7% | 5.5% | 11.5% |

Assessment Report

Candidates who gained Achievement, understood the role of hormones in normal body functioning, and could use their skills and knowledge to explain how the body uses a feedback system to maintain normal functioning.

Candidates who gained Achievement with Merit or Achievement with Excellence, were able to link their descriptions and explanations, and showed a capacity to discuss the role of specific organs and processes in maintaining normal body functioning.

Assessment Schedule

Human Biology: Describe maintenance of normal body functioning (90177)

Evidence Statement

| Question | Evidence Contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|--|--|--|
| 1(a) | More glucose in the body/blood. <i>Restores/replenishes glucose levels after hard exercise.</i> | | |
| 1(b) | <p>Identifies or describes the changes:</p> <p>EG glucose is absorbed into blood.</p> <p>Pancreas makes/produces (more) insulin.</p> <p>Insulin causes glucose to be stored in liver.</p> | <p>Identifies and explains how blood sugar level is maintained:</p> <p>Links ideas:</p> <p>More sugar/glucose in blood →more insulin made. Glucose stored in liver → drop/lower blood glucose/sugar levels.</p> <p>Digestive system absorbs glucose into the blood → pancreas to produce/make more insulin → liver stores glucose as glycogen, so less glucose is in the blood / the level of glucose would decrease as a result. <i>Students writing that insulin converts/breaks down glucose in their answer not given more than an A.</i></p> | |
| 2(a) | <p>Answers identify/describe the changes:</p> <p>Two good examples needed:</p> <ul style="list-style-type: none"> • blood capillaries dilate/get wider/get bigger • capillaries are closer to the skin • sweat production (increases) • hairs on skin lie flat • skin looks flushed/pink/ pale skin looks redder/pink • blood flows at a faster rate through the capillaries • skin moist with sweat. | | |

| Question | Evidence Contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|---|---|--|
| 2(b) | <p>Identifies or describes the changes:</p> <p>Any one of:</p> <ul style="list-style-type: none"> • Shivering occurs. • Hair muscles contract / hairs stand on end / goose bumps/pimples appear. • Capillaries contract / get narrower / get smaller / move away from skin/ deeper within body. • Amount of sweat produced decreases. | <p>Candidates identify and explain why the changes are happening:</p> <p>Any one of:</p> <ul style="list-style-type: none"> • Shivering occurs caused by involuntary contraction of skeletal muscles. • Hair muscles contract / hairs stand on end / goose bumps/pimples appear to trap a layer of air. • Capillaries contract/get narrower / get smaller. Resulting in reduced blood flow to the skin/ warm blood flow to vital organs. • Amount of sweat produced decreases to conserve heat. | <p>Candidates discuss interactions of body functions, comparing to normal</p> <p>Any one of:</p> <ul style="list-style-type: none"> • Shivering occurs. This is caused by involuntary contraction of skeletal muscles. This increases heat production. OR Kinetic energy converted to heat energy. • Hair muscles contract / hairs stand on end / goose bumps/pimples appear to trap a layer of air. This air is warmed by the skin, and then acts as an insulator, reducing the heat loss. • Capillaries contract / get narrower / get smaller. This results in reduced blood flow to the skin. Skin looks pale, and heat loss by radiation is reduced. • Amount of sweat produced decreases. This means little or no heat is lost, as less heat is required to evaporate sweat from the body. • The metabolic rate of the person increases so more heat is produced. • Increased respiration rate in cells – increased heat production. |
| 3 | <p>Describes a response: eg</p> <p>Any one of:</p> <ul style="list-style-type: none"> • liver breaks down/processes alcohol into harmless substances • liver destroys/detoxifies alcohol. <p><i>Have marked as incorrect any answer suggesting that liver – filters, dilutes, flushes, neutralises, absorbs alcohol.</i></p> | <p>Explains Response and identifies products/substances:</p> <p>Any one of:</p> <ul style="list-style-type: none"> • liver breaks down/destroys/detoxifies alcohol into carbon dioxide and water <i>which are excreted.</i> • liver destroys alcohol at rate of 10ml/hr. Thus, more alcohol ingested the longer it takes to detoxify/ excess excreted by other means – kidney/sweat/ breath. | |

| Question | Evidence Contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|---|--|--|
| 4 | <p>Identifies or describes the changes:</p> <p>Any of:</p> <ul style="list-style-type: none"> • brain (hypothalamus) detects less water in body • body fluids/blood become more concentrated/less dilute • urine production decreases/less urine made • decrease in sweating. | <p>Candidates identify and explain why the changes are happening:</p> <p>Any one of:</p> <ul style="list-style-type: none"> • brain (hypothalamus) has (osmo) receptors which detect less water in body • blood/fluids become more concentrated/less dilute → less saliva produced, thus increased thirst • urine production decreases as increase of ADH (in blood) • decrease in sweat production as body tries to conserve water. | <p>Candidates discuss interactions of body functions, comparing to normal:</p> <p>Any one of:</p> <ul style="list-style-type: none"> • body fluids become more concentrated → brain (hypothalamus) has (osmo)receptors which detect less water in body → we feel thirst as less saliva made → drink more to relieve it → ingested fluid is readily absorbed → blood/body fluids become less concentrated/more dilute → body returns to normal and thirst sensation decreases • brain (hypothalamus) stimulates release of ADH → increase water reabsorption by kidney (tubules) → urine production decreases to conserve water and keep fluid balance up • sweat production decreases as body tries to conserve water loss and maintain the normal fluid balance. |

Judgement Statement

Achievement

Total of **FOUR** opportunities answered at Achievement level (or higher).

$$4 \times A$$

Merit

Total of **FOUR** opportunities answered with **TWO** at Merit level plus **TWO** at Achievement level (or higher).

$$2 \times M + 2 \times A$$

Excellence

Total of **FOUR** opportunities answered with **ONE** at Excellence level plus **ONE** at Merit level (or higher) plus **TWO** at Achievement level (or higher).

$$1 \times E + 1 \times M + 2 \times A$$

Human Biology: Describe functioning of human circulatory, respiratory and excretory systems (90178)

National Statistics

| Number of Results | Percentage | | | |
|-------------------|--------------|----------|-------|------------|
| | Not Achieved | Achieved | Merit | Excellence |
| 2,314 | 71.0% | 24.5% | 2.1% | 2.4% |

Assessment Report

Candidates who gained Achievement, were able to recognise the three different organ systems, and showed knowledge in all THREE systems. They were able to write informed descriptions and reasons; their answers were thorough and showed depth of knowledge; and they avoided vague terms.

These candidates read the questions carefully, and used clues from the questions and diagrams in order to answer. They used correct terminology, avoided 'street talk' or slang, gave informed functions and descriptions, and were able to compare structures where required. They demonstrated their knowledge simply and effectively, some by using tables or labelled diagrams to support their answers.

Candidates who gained Achievement with Merit or Achievement with Excellence were able to write detailed and informative sentences, which were linked together for one of the systems. Many candidates showed a strength in two of the three systems, but at these levels the standard did require a good knowledge of all three systems.

Successful candidates were aware of the requirements of the standard, including explanatory notes.

Assessment Schedule

Human Biology: Describe functioning of human circulatory, respiratory, and excretory systems (90178)

Evidence Statement

- / the words or phrases on either side are alternatives
 () the words or phrases are not required in the answer

| Question | Evidence Contributing to Achievement | Evidence Contributing to Achievement with Merit | Evidence Contributing to Achievement with Excellence |
|----------|--|--|--|
| 1(a) | <p>Answer describes the jobs of the parts: (2 ideas needed)</p> <p>alveolus: where gas exchange occurs / enables gases to move rapidly between air and blood.</p> <p>red blood cell: to transport/carry oxygen oxyhaemoglobin.</p> <p>layer of moisture: allows gases/ oxygen to dissolve / speed up diffusion.</p> | <p>One named gas = X</p> <p>Not 'to diffuse'. Not to lubricate</p> | |
| 1(b) | <p>Describes/identifies main characteristics of gas exchange system:</p> <p>Need one from:</p> <ul style="list-style-type: none"> • thin membrane/ thin walls/ thin surface/ one cell thick • moist membrane/ alveoli/ surface eg a surface that is wet • rich supply of blood/excellent blood supply/ many surrounding capillaries/ capillary network • large surface (area). | <p>NOT Diffusion gradient/oxygen moves from air in lungs to capillaries by diffusion NOT Small distance between the air sac/alveoli and capillary (as these do not relate to surface membrane).</p> | |
| 1(c) | <p>Identify/describe the effect asthma has on bronchioles</p> <p>One of:</p> <p>Eg bronchioles (in asthmatic) smaller/contract/close up →smaller airway</p> <p>more/extra/ excess mucous (in asthmatic) →smaller airway</p> <p>smaller airway / more mucous harder →to breathe</p> <p>bronchiole blocked with mucous, harder to breathe</p> | <p>Identify/describe the effect asthma has on bronchioles linked to reduce function of bronchiole</p> <p>Eg air passageway smaller →by extra mucous (& inflammation) →less air flow to and from alveoli/air sac (NOT lungs)</p> <p>OR excess mucous →causes air passages to block/clog →restricting/reducing/stopping air flow to alveoli/air sac.</p> | |

| Question | Evidence Contributing to Achievement | Evidence Contributing to Achievement with Merit | Evidence Contributing to Achievement with Excellence |
|----------|--|--|--|
| 2(a) | <p>Describe function of parts: 2 needed</p> <ul style="list-style-type: none"> • ureter: carries/takes/ transports urine (from kidney) to bladder • urethra: the outlet tube for urine/allows urine to leave body/discharges urine from body/ where urine finally excreted from • kidney: filters blood / removes unwanted substances eg urea / helps control/regulate water/salt in the body. | <div data-bbox="751 555 1465 651" style="border: 1px solid black; padding: 5px;"> Kidney used for osmoregulation, regulation of the pH of blood, excretion & regulation of blood pressure = ✓ </div> | |
| 2(b) | <p>Describe pathway of blood:</p> <p>aorta → renal artery → glomerulus → renal vein → vena cava.</p> <p>OR</p> <p>Aorta → renal artery → afferent artery → glomerulus → efferent artery → renal vein → vena cava.</p> | | |
| 2(c) | <p>Describes how filters are affected by nephritis:</p> <p>(Inflammation →) reduces/stops glomeruli (nephron) working/filtering → so unable to filter out/ remove wastes</p> <p>OR</p> <p>Describes a possible consequence to body eg One of:</p> <ul style="list-style-type: none"> • waste products like urea /water build up in the body/blood • protein levels in urine increase • damaged kidney leads to kidney failure → kidney dialysis needed • decreased urine output • acid/base levels not controlled in blood/ body • blood in urine. | <p>Explains how filters are affected by nephritis AND consequences of preventing filters' function:</p> <p>damaged nephron/glomeruli unable to filter out wastes (from blood) / cannot filter under high pressure</p> <p>linked to (a named example)</p> <p>remain/build up of waste products like urea/water in blood/ more protein/glucose in urine / pH levels not controlled/wrong</p> <p>linked to one further effect eg kidney failure/ dialysis/transplant needed/ swelling/ oedema/ pain/ high blood pressure.</p> | |

| Question | Evidence Contributing to Achievement | Evidence Contributing to Achievement with Merit | Evidence Contributing to Achievement with Excellence |
|----------|--|---|--|
| 3(a) | <p>Describe deoxygenated blood:</p> <p>One of</p> <ul style="list-style-type: none"> • blood with little / less oxygen • blood high in carbon dioxide. | | |
| 3(b) | <p>Describes formation of a blood clot:</p> <p>One of</p> <ul style="list-style-type: none"> • fibrin/ (protein) threads trap blood cells <p>OR</p> <p>Describes how bleeding stops:</p> <p>mesh of fibrin / (protein) threads and blood cells form a scab / plug over wound.</p> | <p>Explains how the clot forms and links to stopping blood loss:</p> <ul style="list-style-type: none"> • fibrinogen (plasma protein) to form fibrin threads →blood cells trapped <p>linked to</p> <ul style="list-style-type: none"> • network/mesh of (fibrin) threads and blood cells form a scab/ plug to stop bleeding/blood loss. | |
| 3(c) | <p>Describe the differences between arteries and veins:</p> <p>Any two of eg</p> <ul style="list-style-type: none"> • arteries have smaller passageways (lumen), veins have larger ones • arteries have thicker elastic layer(wall). Veins have thinner elastic layer (wall) • arteries have thicker muscle layer. Veins have thinner muscle layer • veins have valves. Arteries do not have valves • arteries are round in cross section and veins oval/ arteries will hold their shape and veins cannot • veins carry/ return blood to the heart/ arteries carry blood from the heart. <p>OR</p> <p>Describe ONE structure difference between a vein and artery</p> <p>AND</p> <p>veins carry blood with low pressure, arteries carry blood with high pressure</p> <p>Eg arteries have thicker elastic layer(wall) to carry blood at high pressure. Veins have thinner elastic layer (wall) to carry blood at low pressure.</p> | <p>Explain differences and functions:</p> <p><i>Achieved plus one feature expanded further in terms of differences between arteries and veins.</i></p> <p>One structure compared for artery and vein linked with a reason given for the structure.</p> <p>Eg arteries have thick elastic layer to change in size when heart empties/squeezes/ contracts to help blood leave the heart quickly</p> <p>OR</p> <p>to cope with the high (blood) pressure as heart contracts</p> <p>AND linked to</p> <p>veins have thin elastic layer because blood is at low pressure</p> <p>OR similar explanation in terms of valves.</p> | <p>Discuss the differences between veins and arteries and LINK to function:</p> <p>Achieved plus a further discussion on the feature chosen for merit.</p> <p>Eg merit and another reason</p> <p>Arteries are round in cross section/stay open</p> <p>because they have thicker muscle walls</p> <p>to cope with high blood pressure / to cope with fast flowing blood/ to cope with heart emptying quickly.</p> <p>Whereas veins have thin elastic layer because blood is at low pressure</p> |

| Question | Evidence Contributing to Achievement | Evidence Contributing to Achievement with Merit | Evidence Contributing to Achievement with Excellence |
|----------|--|--|---|
| 4 | <p>Describe <u>effect</u> of IDA on body:</p> <p>One of:</p> <ul style="list-style-type: none"> • body/muscles do not get enough oxygen with IDA • less respiration in cells/tissues/ muscles • less oxygen in blood/ body. | <p>Explain <u>effect</u> of IDA on body:</p> <p>Body has less Hb → red blood cells can't pick up/carry/deliver enough/ less oxygen to cells/tissues/muscles.</p> <p>OR</p> <p>body/muscles do not get enough oxygen with IDA.</p> <p>AND one of:</p> <ul style="list-style-type: none"> • less respiration occurs in cells/tissues/muscles • cells begin anaerobic respiration <p>OR</p> <p>Exercise uses more oxygen → with IDA there is not enough oxygen getting to muscles.</p> <p>linked to:</p> <p>lack of iron/iron deficiency → muscles/body do not get enough oxygen → person feels tired/causes exhaustion.</p> | <p>Discuss (LINK) <u>how</u> IDA leads to exhaustion:</p> <p>Eg</p> <p>(New) RBCs lack of iron → body/RBCs/ blood has less Hb → red blood cells can't pick up/carry/deliver enough/less oxygen to cells/tissues/muscles.</p> <p>PLUS one of:</p> <ul style="list-style-type: none"> • less respiration idea → lack of energy/tired feeling/fatigue • oxygen in alveoli → oxygen diffusion LESS → less oxygen absorbed by RBC as unable to transport oxygen (and is wasted and breathed out). |

Judgement Statement

| Question | | A | M | E |
|----------|--------------------|---|---|---|
| 1a | Respiratory system | ✓ | | |
| 1b | | ✓ | | |
| 1c | | ✓ | ✓ | |
| 2a | Excretory system | ✓ | | |
| 2b | | ✓ | | |
| 2c | | ✓ | ✓ | |
| 3a | Circulatory system | ✓ | | |
| 3b | | ✓ | ✓ | |
| 3c | | ✓ | ✓ | ✓ |
| 4 | Circulatory system | ✓ | ✓ | ✓ |

| Achievement | Merit | Excellence |
|---|--|---|
| 6A with a minimum of 1A from respiratory system + 1A from excretory system + 1A from circulatory system. | Achievement plus 3 Merit opportunities. | Merit plus 1 Excellence opportunity. |

Human Biology: Describe functioning of the human reproductive system (90179)**National Statistics**

| Number of Results | Percentage | | | |
|-------------------|--------------|----------|-------|------------|
| | Not Achieved | Achieved | Merit | Excellence |
| 2,604 | 67.8% | 25.4% | 5.7% | 1.2% |

Assessment Report

Candidates who gained Achievement, showed knowledge of the systems and processes, and were able to answer linked questions. They were knowledgeable of what the standard required, used the correct terminology, and showed a deeper knowledge of the subject by their clear and concise answers.

Candidates who gained Achievement with Merit or Achievement with Excellence, were more thorough and showed a deeper understanding. They could explain and discuss in detail, and demonstrated linkage of ideas.

Assessment Schedule

Human Biology: Describe functioning of the human reproductive system (90179)

Evidence Statement

| Question | Evidence contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|---|---|--|
| 1(a) | <p>Testis Produces testosterone/ produces sperm.</p> <p>Epididymis Stores/matures sperm.</p> <p>Prostate gland Adds fluid to neutralise acid in vagina.</p> <p>Seminal vesicle Adds fluid to sperm to give sperm (sugar/fructose) energy to move / add fluid to lubricate sperm.</p> <p>[Any 3 of 4]</p> | | |
| 1(b) | <p>Any 2 of: acne testes/testicles grow larger/lower penis grows larger larynx gets larger voice deepens body muscles get larger shoulders broaden hair grows underarms/ on chest/ in pubic area starts producing sperm/seminal fluid/ has wet dreams.</p> | | |
| 1(c) | <p><i>Describes that the body begins to produce testosterone which causes puberty to start.</i></p> <p>Eg the body/testes begins to produce testosterone which causes the physical changes (puberty) to start.</p> | <p><i>Explains how testosterone is produced: LH & FSH /effect testosterone has on the body.</i></p> <p>Eg testes begin to produce testosterone. Increased levels of testosterone target different parts of the body such as testes/penis/voice box to make them larger etc.</p> | |
| 2(a) | <p>Correct order of: vagina, cervix, uterus, oviduct (fallopian tube). [Need ALL 4]</p> | | |

| Question | Evidence contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|---|---|---|
| 2(b) | <p>Describes process of ovulation AND fertilisation.</p> <p>Eg ovary released an egg (ovulation). Sperm fuses/ joins/ enters with the egg (fertilisation) in the oviduct.</p> <p>[sperm meets egg = NA]</p> <p>OR Describes that these twins result from ovulation of two eggs but does not describe how fertilisation occurred.</p> <p>eg both ovaries released an egg at the same time / one ovary released two eggs at the same time and these were both fertilised by sperm.</p> <p>OR Describes how two different eggs were fertilised by two different sperm.</p> <p>Eg two eggs were passing through an oviduct. One sperm fertilizes one egg while another sperm fertilises the second egg.</p> | <p>Explains how two different eggs were released at ovulation AND how they both were fertilised.</p> <p>Eg both ovaries released an egg at the same time / one ovary released two eggs at the same time. One sperm fused/joined with one egg while another sperm fused/joined with the other egg in the oviduct(s).</p> | |
| 3(a) | <p>Describes how progesterone is produced AND describes its role at the beginning of gestation.</p> <p>Eg Ovary/ yellow body/ corpus luteum makes progesterone to help the lining of the uterus thicken more / stay thick. The young embryo embeds into the thickened uterus lining and progesterone production by the ovary continues/ prevents release of further eggs.</p> | <p>Explains how the ovary produces progesterone and when the placenta takes over in its production. Explains the role progesterone has at the beginning of gestation.</p> <p>Eg Corpus luteum (ovary) secretes progesterone to thicken the uterus lining further. Once the young embryo embeds into the thickened uterus lining, this tells the corpus luteum to continue to secrete progesterone. At about 12 weeks into pregnancy the placenta takes over progesterone production so that the thickened uterus lining is kept thick.</p> | <p>Discussion includes:</p> <ul style="list-style-type: none"> • when and how long the corpus luteum produces progesterone • when placenta takes over progesterone production • the role of progesterone throughout gestation eg after week 12 it prevents uterine contractions • progesterone levels increase throughout gestation and peak at week 38. |
| 3(b) | <p>Any two of carbon dioxide/ urea/ urine/ water.</p> | | |

| Question | Evidence contributing to Achievement | Evidence contributing to Achievement with Merit | Evidence contributing to Achievement with Excellence |
|----------|--|---|--|
| 3(c) | <p>Any two of (a suggestion):</p> <p>Describes closeness of embryo's capillary network in placenta to mother's blood space in uterus.</p> <p>Describes oxygen from mother's blood moves/diffuses into embryo's blood.</p> <p>Describes carbon dioxide moves/diffuses from embryo's blood into blood space in uterus of mother.</p> <p>Describes mother's blood and baby's blood never mix.</p> <p>Describes capillary network makes diffusion/exchange more efficient.</p> | <p>Explains how substances are exchanged in terms of</p> <ul style="list-style-type: none"> • diffusion and direction of movement between embryo and mother eg oxygen from mother's blood into embryo's blood (and carbon dioxide) • OR explains concentration gradient <p>AND one of</p> <ul style="list-style-type: none"> • the closeness of the embryo's capillary network in placenta lying very close to mother's blood space in uterus: means little distance for substance to move: faster diffusion • more capillaries: increased surface area. Exchange of substances is more efficient • greater affinity of foetal haemoglobin for O₂. | |
| 3(d) | <p>Description of birth includes at least three of:</p> <ul style="list-style-type: none"> • uterus contractions occur; • waters break; • cervix dilates up to 10 cm; • baby's head passes through cervix, vagina; • further contractions baby is born/ baby is born head first; • afterbirth (placenta) follows. | <p>Explain the effect of oxytocin on the birth process. Explanation includes:</p> <ul style="list-style-type: none"> • uterus contractions begin gently, later become very strong; powerful to assist birth; oxytocin causes uterus contractions/cervix dilation • once cervix fully dilated to 10 cm uterus contractions are very powerful to assist birth; baby (usually) is born head first. • further uterus contractions occur to expel the placenta. | <p>Discuss (link) how oxytocin results in the birth of the baby. Discussion includes:</p> <ul style="list-style-type: none"> • onset of labour oxytocin causes uterus contractions to start; as cervix dilates further, more oxytocin is secreted causing stronger uterus contractions. • once cervix fully dilated to 10 cm uterus contractions are very powerful to assist birth. Baby (usually) is born head first. • further uterus contractions occur to expel the placenta. |

Judgement Statement

| Achievement | Merit | Excellence |
|--------------------------|--|--------------------------------------|
| 5 Achievement questions. | Achievement plus 2 Merit questions. | Merit plus 1 Excellence question. |