

**Assessment Schedule – 2008**

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

**Evidence Statement**

| Q          | Evidence contributing to Achievement   | Evidence Contributing to Achievement with Merit   | Evidence Contributing to Achievement with Excellence |
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| ONE<br>(a) | <p><i>Describes any TWO of:</i></p> <ul style="list-style-type: none"> <li>• Penis grows larger.</li> <li>• Testes grow larger and descend / drop/lower.</li> <li>• Testes start to produce sperm.</li> <li>• Testes start to produce <b>testosterone</b>.</li> <li>• Seminal vesicles ready to release sugar / nutrients onto sperm.</li> <li>• Prostate gland ready to put (neutralising) chemical onto sperm.</li> <li>• Seminal fluid produced.</li> <li>• Pubic hair</li> </ul> |   |  |
| (b)        | <p><i>Describes ONE of:</i></p> <ul style="list-style-type: none"> <li>• Testosterone tells body to change / puberty to start/sperm production to begin.</li> <li>• FSH signals male reproductive structures to grow larger.</li> <li>• LH starts testosterone production.</li> </ul>  | <p><i>Achievement <b>linked to</b> development of male sexual characteristics, eg:</i></p> <p>→ into the male adult form / tells body to develop male secondary sexual characteristics / spermatogenesis.</p> <p>→ start producing the various substances / chemicals / testosterone / sperm.</p> |  |
| (c)        | <p><i>Any THREE structures correctly labelled.</i></p>   |   |  |
| (d)        | <p><i>Describes THREE of:</i></p> <p><b>Epididymis</b> place to store sperm / place for sperm to mature.</p> <p><b>Vas deferens</b> carries sperm from epididymis (testes) to penis / urethra/ejaculation.</p> <p><b>Prostate gland</b> adds chemicals/alkaline soln to sperm to help them survive in (acidic) vagina.</p> <p><b>Seminal vesicle</b> adds nutrients / sugars/fructose to sperm to help them move. NOT produce semen<br/>NOT glucose.</p>                             |   |  |

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| <p>(e)</p>         | <p><i>Describes what happens to sperm once leave male, eg ONE of:</i></p> <ul style="list-style-type: none"> <li>• Many die (or cannot swim) once in vagina.</li> <li>• Many sperm are deformed / faulty.</li> <li>• Some sperm will move up the wrong oviduct / get lost.</li> <li>• To increase chances of fertilisation.</li> </ul> | <p><i>Explains why (must be linked to the description), eg:</i></p> <p>The sperm that lack the chemical to help them survive in the vagina, <b>cannot reach the egg</b>. (Some sperm are allergic to the acid vagina – they cannot move / swim / perform their function.)</p> <p style="text-align: center;"><b>OR</b></p> <p>Faulty / deformed sperm eg 2 or 3 tails are <b>poor swimmers</b> and can't swim the distance – die / don't reach the egg.</p> |  |
| <p>TWO<br/>(a)</p> | <p><i>Describes ONE of:</i></p> <ul style="list-style-type: none"> <li>• Travels <b>from</b> oviduct / fallopian tube <b>to</b> uterus/endometrium.</li> <li>• Continued cell division / mitosis to form a ball of cells / blastocyst / (embryo).</li> <li>• NOT 8 cells.</li> <li>• NOT grow into ball of cells.</li> </ul>           |   |  |

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| <p>(b)</p> | <p><i>Describes what 3 of 4 hormones do, eg:</i></p> <p><b>FSH</b> stimulates ovary to mature an egg / ripening of a follicle.</p> <p><b>LH</b> stimulates mature follicle / ovary to release mature egg.<br/>OR<br/>LH stimulates ovulation to occur.</p> <p><b>Oestrogen</b> stimulates endometrium / uterus lining to <b>begin</b> to thicken.</p> <p><b>Progesterone</b> stimulates endometrium to thicken <b>more</b>.</p> | <p><i>Explanation links the event to the changing levels of hormone(s) in ovulation and describes function of progesterone.</i></p> <p>During menstruation the pituitary gland <b>releases</b> FSH, which in turn stimulates an ovary to start maturing a follicle / several follicles. OR The maturing follicle, which contains the developing / maturing egg / ovum, begins to secrete oestrogen, which directs the endometrium / uterus lining to start thickening.// When LH peaks, it signals / tells the mature / ripe follicle to release the mature egg (ovulation occurs). OR The ruptured follicle changes into a temporary gland – corpus luteum / yellow body and begins producing progesterone. This directs the endometrium to thicken <b>more</b>.</p> <p style="text-align: center;"><b>OR</b></p> <p><i>Describes the hormones and events to cause ovulation &amp; explains the feedback mechanism of progesterone on FSH levels plus why oestrogen and progesterone hormone levels dropped by days 26 – 27, eg:</i></p> <p>Soon after menstruation has started, FSH secreted by the pituitary acts on the ovary to start the ripening of a follicle and the maturation of the egg inside the follicle. The follicle / ovary in turn secretes oestrogen to tell the endometrium / uterus lining to begin thickening. When LH levels peak, the mature follicle / ovary is signaled / stimulated to release an egg / ovum.</p> <p>The ripe follicle, which has released the egg, changes into a temporary gland – corpus luteum / yellow body and begins producing progesterone. This directs the endometrium to thicken <b>more</b>.</p> <p>While progesterone levels are high, <b>FSH production does not occur</b> (is inhibited), so the ovaries do not have any more follicles maturing / ripening.</p> <p>If an embryo does not implant into the uterus lining, the corpus luteum stops releasing / producing progesterone and oestrogen. These hormone levels decrease by day 26 / 27, causing the endometrium to break down at day 28 of the menstrual cycle.</p> | <p><i>Discusses the changing levels of ALL 4 hormones linked to the ovary and uterus events supported by data from the graph, eg:</i></p> <p>During menstruation the pituitary gland releases FSH, which in turn tells an ovary to start maturing a follicle / several follicles. The maturing follicle, which contains the developing / maturing egg / ovum, begins to secrete oestrogen, which directs the endometrium / uterus lining to start thickening. From days 6 to 12, the oestrogen levels continue to increase, which in turn tells the pituitary to secrete more LH. When LH peaks, it signals / tells the mature / ripe follicle to release the mature egg (ovulation occurs), eg day 14. After ovulation, the levels of FSH and LH decrease.</p> <p>The ripe follicle, which has released the egg, changes into a temporary gland – corpus luteum / yellow body and begins producing progesterone (it also produces oestrogen). This directs the endometrium to thicken <b>more</b>.</p> <p>While oestrogen levels are high, FSH production does not occur (is inhibited), so the ovaries do not have any more follicles maturing / ripening.</p> <p>If there is no implantation of an embryo, the corpus luteum stops releasing / producing progesterone and oestrogen by day 23 and the endometrium breaks down by day 28 of the menstrual cycle.</p> |
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| <p>THREE<br/>(a)</p> | <p><i>ALL 3 structures correctly labelled and named.</i></p>  |   |   |
| <p>(b)</p>           | <p><i>Correctly describes TWO structures, eg:</i></p> <p><b>Umbilical cord</b> connects foetus to placenta.<br/>NOT connects foetus to mother.</p> <p style="text-align: center;">OR</p> <p>Allow transport of nutrients / wastes between mother and foetus.</p> <p><b>Amniotic fluid</b> protects / cushions foetus, eg when mother moves/ supports foetus for movement.<br/>NOT support foetus</p> <p><b>Cervix</b> ring of muscle which controls opening of uterus/cervix opens to let baby out.<br/>NOT bact / fungi stopped by cervix.<br/>NOT cervix is the opening.</p> <p><b>OR</b><br/>during gestation helps keep foetus within uterus.</p> |   |   |
| <p>(c)</p>           | <p><i>Describes ONE of:</i></p> <ul style="list-style-type: none"> <li>• fewer blood capillaries / vessels / reduced blood supply between mother and foetus in placenta, than should be</li> <li>• exchange of materials between mother and foetus not efficient</li> <li>• not enough nutrients (or named nutrient) pass across placenta</li> <li>• placenta underdeveloped.</li> </ul> <p>[not lifestyle factor of mother]<br/>Eg: smoking, alcohol</p>   | <p><i>Explains how the faulty placenta results in a smaller foetus, eg:</i></p> <p><b>With fewer blood capillaries</b> in the placenta, or <b>smaller surface area</b>, substances required for the (growing) foetus like glucose, oxygen, amino acids etc <b>will not be diffused / transported</b> from mother's blood supply to the foetus's capillaries efficiently. The <b>foetus will get fewer nutrients, so grow more slowly.</b></p> <p>OR</p> <p>Substances required for the (growing) foetus like glucose, oxygen, amino acids etc <b>will not be diffused / transported</b> from mother's blood supply to the foetus's capillaries efficiently. The <b>foetus will get fewer nutrients, so grow more slowly</b> and The foetus needs glucose and oxygen for <b>respiration</b> to give <b>energy</b> for more cell division / energy for foetus metabolism. [OR amino acids for proteins for cell division].</p> <p>OR</p> <p><b>Progesterone level drops, contractions start &amp; baby born before it is fully developed.</b></p> | <p><i>Explains ideas in Merit and links how specific nutrients assist foetus growth. If nutrients reduced, a smaller baby is born, eg:</i></p> <p>A placenta with a reduced blood supply / fewer blood capillaries between mother and foetus means substances required for the foetus will not be provided in sufficient amounts. <b>Fewer blood capillaries</b> means <b>reduced surface area</b> is available <b>for the exchange of nutrients and removal of waste products</b>. Nutrients will not be <b>diffused / transported</b> from mother's blood supply to the foetus's capillaries efficiently. Result is foetus will grow more slowly, a smaller baby is born.</p> <p>The foetus needs glucose and oxygen for <b>respiration</b> to give <b>energy</b> for more cell division / energy for foetus metabolism. [OR amino acids for proteins for cell division].</p> |

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| (d) | <p><i>Describes increase of oxytocin, eg ONE of:</i></p> <ul style="list-style-type: none"> <li>causes / controls uterus/myometrium contractions</li> <li>increases strength of uterus contractions as birthing continues</li> <li>dilates cervix.</li> </ul> <p>NOT causes labour<br/>NOT reference to milk production<br/>NOT cervix contracts.</p> <p><i>(Oxytocin released by the brain to start contractions - +ve feedback mechanism)</i></p> | <p><i>Explains an effect of increase oxytocin levels, eg:</i></p> <p>Oxytocin stimulates uterus contractions to help push baby down into cervix / assists dilating of cervix. This in turn causes more oxytocin to be released, which causes stronger uterine contractions, which are needed for the second stage of labour / birth of baby.</p> <p><b>OR</b></p> <p>During birth, levels of oxytocin increase in body / blood to cause stronger and stronger uterus contractions to help the second stage and third stage of labour to occur / birth of baby and the expelling of the placenta and umbilical cord.</p> |  |
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### Judgement Statement

| Achievement  | Achievement with Merit   | Achievement with Excellence   |
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| <p>Total of SEVEN opportunities answered at Achievement level,<br/>OR<br/>SIX opportunities including TWO at Merit level.</p> <p><math>7 \times A</math> OR <math>2 \times M + 4 \times A</math></p> | <p>Total of at least SIX opportunities answered with THREE at Merit level or higher.</p> <p><math>3 \times M + 3 \times A</math></p> | <p>Total of at least SIX opportunities answered with ONE at Excellence level and TWO at Merit level or higher.</p> <p><math>1 \times E + 2 \times M + 3 \times A</math></p> |