



NATIONAL SENIOR CERTIFICATE EXAMINATION  
NOVEMBER 2013

**LIFE SCIENCES: PAPER II**

**STANDARDIZED MARKING GUIDELINES**

Time: 2½ hours

150 marks

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**These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.**

**The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.**

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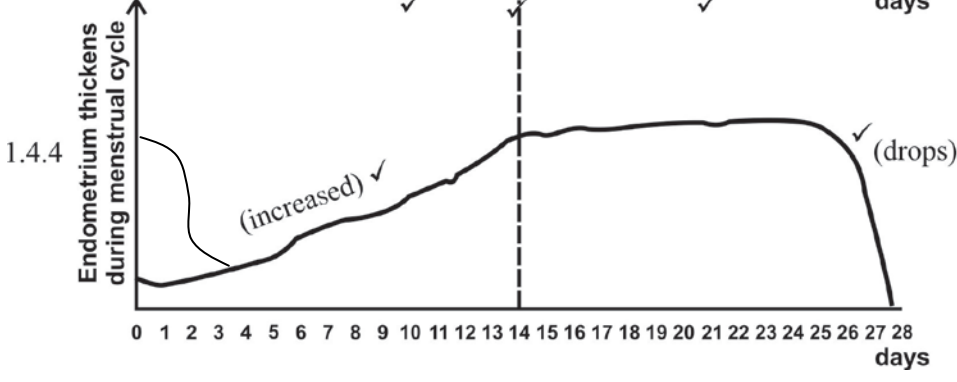
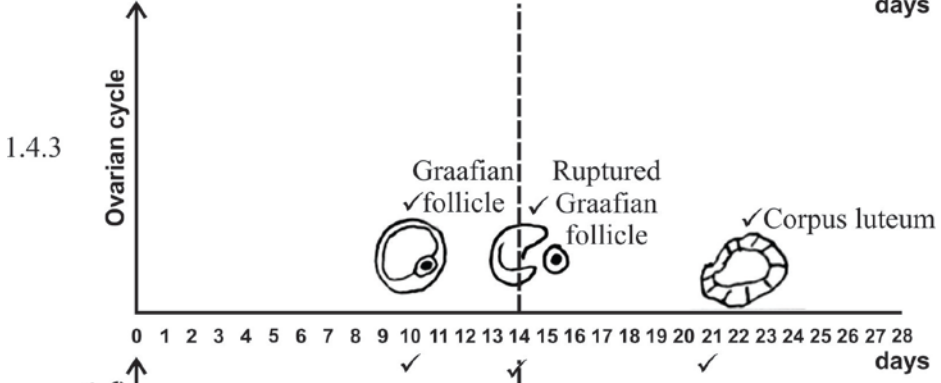
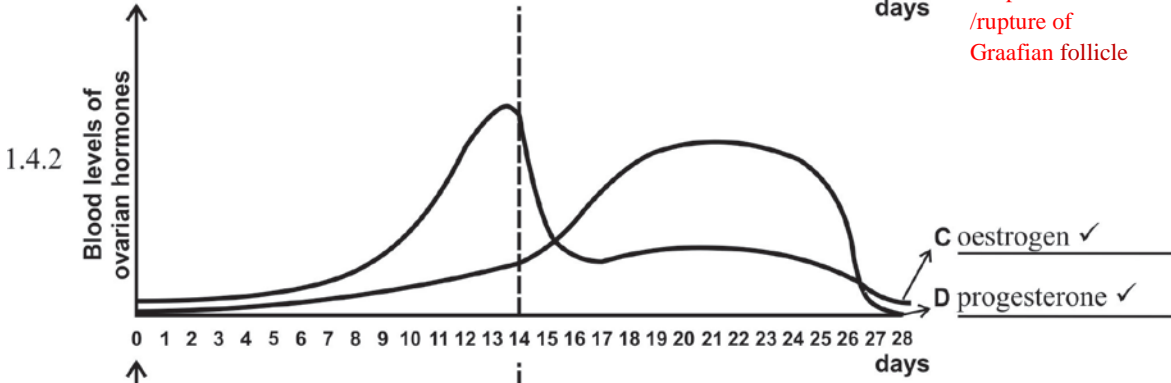
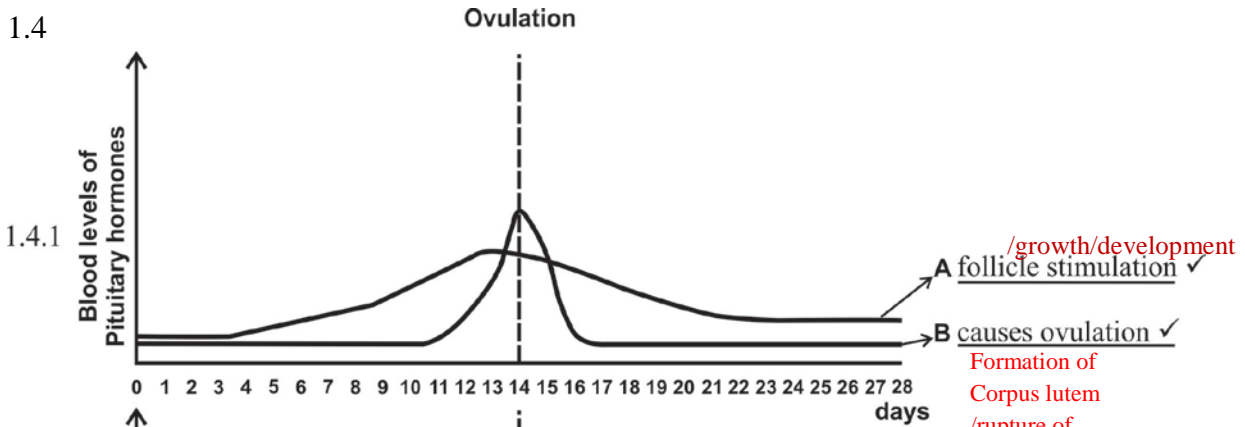
**QUESTION 1**

- | <b>Column A</b>  |   | <b>Column B</b>                   |     |
|--|---|-----------------------------------|-----|
| [B] The transfer of pollen from an anther to a stigma                        | A | Asexual (vegetative) reproduction |     |
| [A] The development of a new identical plant from a bulb e.g. onion          | B | Pollination                       |     |
| [D] The fusion of a male gamete and a female gamete                          | C | Seed                              |     |
| [E] Structure that supports an anther  | D | Fertilisation                     |     |
| [I] Polyploidy in crops such as wheat results from this form of reproduction | E | Filament                          |     |
| [F] Structure that holds the stigma in place                                 | F | Style                             |     |
| [J] Tissue culture produces many small plants (plantlets)                    | G | Fruit                             |     |
| [C] Developed fertilised ovule   | H | Germination                       |     |
|  | I | Sexual reproduction               |     |
|  | J | (Plant) Cloning                   | (8) |
- 
- |     |       |                |     |
|-----|-------|----------------|-----|
| 1.2 | 1.2.1 | umbilical cord | (1) |
|     | 1.2.2 | amniotic       | (1) |
|     | 1.2.3 | mammary        | (1) |
|     | 1.2.4 | amnion         | (1) |
|     | 1.2.5 | placenta       | (1) |

1.3

Statement	True	False	Correction
Syphilis is transmitted by <u>body fluids</u> .	X		
Gonorrhoea can be cured with <u>penicillin</u> .		X	<u>Other</u> antibiotics <b>Tetracycline</b>
The greatest number of increases in new cases of STDs was between <u>1991 and 1997</u> .		X	1997 and 2001

(5)



1.5

1.5.1	1.5.2	1.5.3	1.5.4	1.5.5	1.5.6
B	C	C	D	C	A

(10)  
 [40]

**QUESTION 2**

- 2.1 2.1.1 Front/lower neck/across the trachea/below the larynx (2)
- 2.1.2 Thyroxin (1)
- 2.1.3 Endocrine glands have no ducts / for transport or for rapid circulation around the body/ **blood system transport hormones** (1)
- 2.1.4 Controls metabolic rate stimulates growth/development of organs /**normal functioning of the nervous system/ promotes normal function of the heart** (2)
- 2.1.5 (a) TSH (1)
- (b) (anterior) pituitary gland/(**adeno**)hypophysis (1)
- 2.1.6 Cause TWO symptoms (4)
- Cretinism – too little thyroxin in infant(**child**)/ **hypo secretion of thyroxin**; short/thick skin, reduced growth, slow mental development, **immature sexual development**
- Myxoedema – too little thyroxin in adult; skin thickens on hands and feet, tongue thickens, slow mental and physical activities, **low blood pressure/heart rate/respiratory rate, weight gain, low body temperature, constipation**
- Grave's Disease – excess thyroxin/**hyper thyroidism/ auto immune disease**; loses weight, hyperactive, insomnia, protruding eye balls, **high blood pressure**
- 2.2 Laughing is an effective way to deal with stress.  
After a good laugh a person generally feels good  
Laughing helps lower blood pressure **may use data but must be linked to 'laughing'** (6)
- 2.3 2.3.1 Prone to lightning; dry and wet periods (2)
- 2.3.2 10 (1)
- 2.3.3 E.g. throwing burning cigarettes out of a car window starts a fire or other reasonable answer (**for half and answer**) (2)
- 2.3.4 Pioneer species grow in the bare ground/**mosses and weeds**; then small shrubs take root/**intermediate plants/followed by seres/ seral stage**; finally the climax grassland species take over (3)
- 2.3.5 (a) Burning removes old/dead growth so that new grass sprouts / recycles nutrients/**provides new grazing** (2)
- (b) Roots and dead material that keep top soil in place are removed /**soil no longer protected** (2)
- [30]**

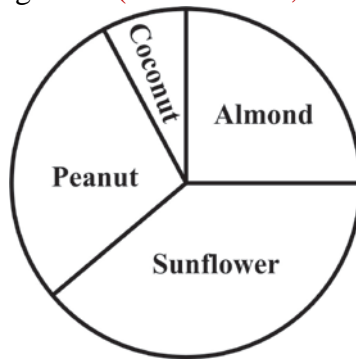
**QUESTION 3**

- 3.1 3.1.1 regularly used display area /area where male birds gather (2)
- 3.1.2 Yes. Fluffing out of neck feathers creates a 'balloon' visible for 2 km/ over great distance (3)
- 3.1.3 Yes. Male becomes visible for 2 km not only to the female () but predators as well (2)
- 3.1.4 Human activity can disrupt the courtship activities - **describe** /Farming removes natural vegetation so there is no 'lek'. (3)
- 3.1.5 (a) internal fertilisation
- (b) amniotic egg
- (c) some parental care (3)

- 3.2 3.2.1 A B C (3)  
 3.2.2 wild dogs hunt in packs pursuing prey in a long open chase which exhausts the prey. Yapping during the chase helps co-ordinate movements. When the prey tires one dog grabs the tail and another the upper lip. Remainder of the pack quickly disembowels prey.  
 Any 4 sequential facts (4)

- 3.3 3.3.1 Ovum/ovule is fertilised by male gamete/cell in pollen grain to form a zygote which grows into an embryo. It is surrounded by a food source and a seed coat.  
 Any 3 (3)

- 3.3.2 Labels(key may be used) ; heading e.g. % protein per 250 ml of seeds; relative size of segments (25% almond; smallest coconut)



- 3.3.3 Peanuts provide the highest amount of protein (17%) /energy (4 230 kj)  
 Almonds provide the highest % (91) of oils /unsaturated fats.  
 Coconut has a small amount of protein (7%)  
 Other correct answers. (3)

[30]

**QUESTION 4**

- 4.1 4.1.1 Intraspecific competition is competition between **humans** for the same resources. (2)  
 4.1.2 Humans competing with impala for grasslands where humans clear natural vegetation to plant crops and impala lose food resources so population decreases (4)
- 4.2 4.2.1 Establishment of territory on the coastline which protects food resources OR increases chances of survival so those on the edge of the group can warn others of predators /sudden loud calls/movement of large numbers can confuse predators. **Other reasonable explanation.** (3)  
 4.2.2 high winds/lack of soil depth/not at that stage of succession /poor soil/ young volcanic island/ **extreme climatic conditions** (1)  
 4.2.3 census/counting by observation / **direct sampling** (1)  
 4.2.4 Predation is a process in which one animal hunts and kills another animal (of a different kind) for food. (3)  
 4.2.5 (a) **(killer) whale**  
 (b) **(fur)seal** (2)  
 4.2.6 When size of seal population increases the whale population increases resulting in the seal population dropping in numbers then the whale population drops in numbers (4)

- 4.3 4.3.1 A immigration; B emigration (2)
- 4.3.2 Mortality is death rate. or numbers of (birds) dying (per unit of population) (1)
- 4.3.3



- Winter time** (4)
- 4.3.4 Over 3 years the birth rate must on average be greater than the mortality OR increased immigration therefore increased births; few deaths therefore overall positive growth rate. (3)

[30]

**QUESTION 5**

The IEB standard rubric will be used to assess the responses to the question – which is open ended.

The following are guidelines to the content and sources relevant to either argument.

Rubric reference	I DO think surrogate motherhood is the best ...	I DO NOT think surrogate motherhood is the best ...
Content: thoroughness	Source A par. 3 volunteered Source B par. 1+2 would help both	Source A par. 3 legal issues Source B par. 3 + 4 argument with partners legal issues
Support argument	Source C par. 3 Source D – legal aspects	Source C Source D – statistics Source E
Argument against noted	Source C Source D – statistics Source E	Source C par. 3 Source D – legal aspects

[20]

**Total: 150 marks**

**QUESTION 5 RUBRIC**

	<b>1 mark</b>	<b>2 marks</b>	<b>3 marks</b>	<b>4 marks</b>
<b>Content: Thoroughness</b>	<ul style="list-style-type: none"> <li>Up to 1/3 of potential detail in sources cited ( 1 to 4 facts)</li> </ul>	<ul style="list-style-type: none"> <li>About half of potential detail in sources cited ( 4 to 8 facts from sources)</li> </ul>	<ul style="list-style-type: none"> <li>All main topics in sources covered</li> <li>About ¾ of potential detail in sources cited ( 9 to 12 facts)</li> </ul>	<ul style="list-style-type: none"> <li>All main topics covered</li> <li>Source detail very close to full potential</li> <li>At least (1) significant instances of information beyond the sources (13 – 18 facts; 1 must be original and beyond the sources)</li> </ul>
<b>Content: Relevance</b>	<ul style="list-style-type: none"> <li>Mostly digression and/or repetition/<b>much that is incorrect</b></li> </ul>	<ul style="list-style-type: none"> <li>Around half is digression and/or repetition</li> </ul>	<ul style="list-style-type: none"> <li>Repetition mostly avoided</li> <li>Some minor digression</li> <li>Argument relevant – <b>focus around surrogacy not IVF</b></li> </ul>	<ul style="list-style-type: none"> <li>Isolated incidences of minor repetition</li> <li>No digression</li> <li>Argument relevant</li> <li><b>No biological inaccuracies</b></li> </ul>
<b>Supporting Argument, i.e. <u>for</u></b>	<ul style="list-style-type: none"> <li>Writing consists of facts with little linkage or reasoning</li> <li>Reasoning incorrect</li> </ul>	<ul style="list-style-type: none"> <li><b>Maximum if no clear decision to support</b></li> <li>Reasoning correct, but hard to follow</li> <li>Ordinary; some linkage is evident</li> </ul>	<ul style="list-style-type: none"> <li>Supports the position</li> <li>Reasoning is clear</li> <li>Minor errors in flow</li> <li>Solid but not compelling; linkage sometimes missed</li> </ul>	<ul style="list-style-type: none"> <li>Strongly supports a clear position</li> <li>Reasoning is very clear and succinct</li> <li>Flow is logical, showing evidence of clear planning</li> <li>Compelling with regular use of linking language</li> </ul>
<b>Fairness, i.e. <u>Argument against</u></b>	<ul style="list-style-type: none"> <li>One counter opinion given.</li> </ul>	<ul style="list-style-type: none"> <li>Two counter opinions given</li> </ul>	<ul style="list-style-type: none"> <li>Three or more counter opinions given</li> </ul>	
<b>Position</b>	<ul style="list-style-type: none"> <li><b>Clear decision made</b></li> </ul>			
<b>Presentation</b>	<ul style="list-style-type: none"> <li>Writing is almost unintelligible</li> <li>Tone, language and terminology unscientific and exceptionally weak</li> <li>Introduction <b>and/or</b> conclusion <b>not</b> present</li> </ul>	<ul style="list-style-type: none"> <li>Tone, language and terminology is weak</li> <li>Attempts at correct paragraphing</li> <li><b>Introduction and conclusion</b> present, no matter how weak</li> </ul>	<ul style="list-style-type: none"> <li>Tone is consistent and suited to scientific argument</li> <li>Good and appropriate language and terminology</li> <li>Mostly appropriate paragraphing</li> <li><b>Introduction and conclusion</b> have merit</li> </ul>	<ul style="list-style-type: none"> <li>Tone mature and suited to scientific argument</li> <li>Excellent and appropriate use of language and terminology</li> <li>Correct paragraphing with good transitions</li> <li>(Interesting) <b>introduction</b>, (satisfying) <b>conclusion</b></li> </ul>