



NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY 2014

LIFE SCIENCES: PAPER II

MARKING GUIDELINES

Time: 2½ hours

150 marks

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.

QUESTION 1

Column A	Column B
[E] A method used to estimate plant population density	A Population size
[G] The set of specific conditions in an area necessary for survival of a particular species	B Immigration
[K] A method used to estimate a bird population size	C Carrying capacity
[J] The sum of the factors inhibiting a population's growth in a habitat	D Ecological succession
[L] A group of different species inhabiting an area	E Quadrat sampling
[A] The number of individuals in a population	F Food web
[F] Linked food chains with many energy pathways	G Ecological niche
[C] The maximum number of individuals that can be supported by the environment at a given time	H Population density
[I] Permanent movement of individuals out of a habitat	I Emigration
[D] A gradual natural replacement of one animal and plant community by another over time	J Environmental resistance
	K Mark-recapture
	L Community

(10)

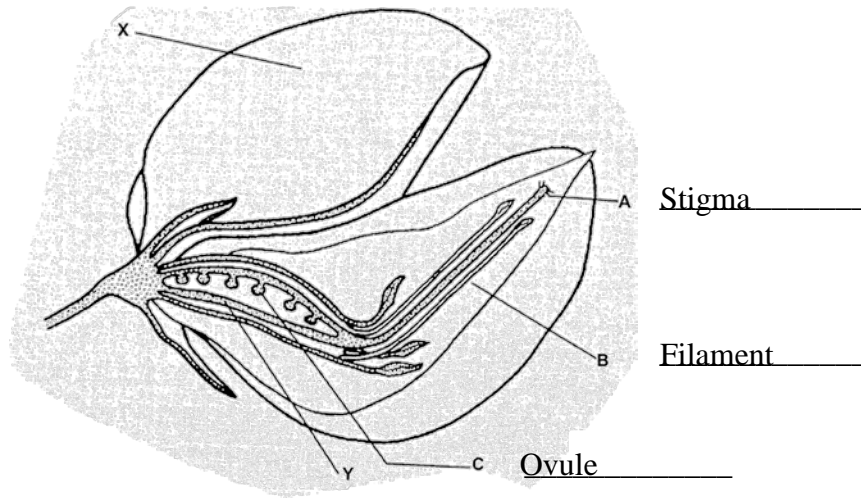
- 1.2 1.2.1 C (1)
- 1.2.2 D (1)
- 1.2.3 A (1)
- 1.2.4 B (2)

1.3

Statement	Items	Answer
The stickleback fish reproduces successfully	1. Courtship 2. Parent care	C
Once mating takes place there is ...	1. Internal fertilisation 2. External fertilisation	B
In the stickleback the development of the embryo is ...	1. Vivipary 2. Ovovivipary	D
The fish embryos develop in an egg without a shell	1. False 2. True	B
The reproductive strategy in terms of the survival of this fish	1. r-strategy 2. K-strategy	A

(5)

1.4 The following diagram shows the L.S. of a flower.



1.4.1 Stigma Filament Ovule (3)

1.4.2 a process of transfer of pollen from an anther to a stigma (3)

1.4.3 X dies/shrivels
 Y becomes a fruit (2)

1.4.4 (a) vegetative/asexual reproduction
 (b) seed
 (c) polyploidy (3)

1.4.5 (a) to record Grade 12 attitude to GM (1)
 (b) 60 (1)

(c) Question must be relevant to GM issues clearly stated e.g. Are GM crops safe to eat? (3)

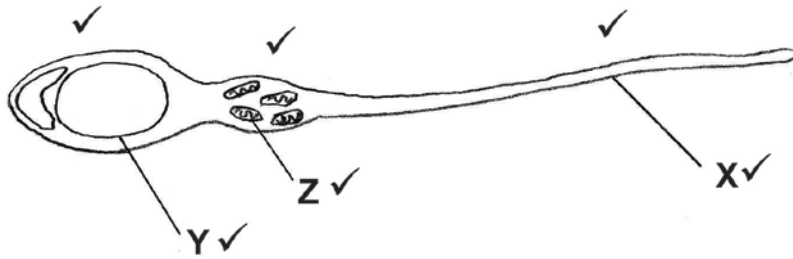
(d) The majority of Grade 12s think GM crops will solve world food storage (2)

(e) Yes – e.g. GM can provide crops able to adapt to global warming or
 No – e.g. long term negative effects of changed genes is unknown (2)

[40]

QUESTION 2

- 2.1 2.1.1 Front view/Human (of) male reproductive system (3)
- 2.1.2 A – epididymis – stores sperm/sperm mature here
 B – scrotum – protects testis /helps to regulate temperature of testis
 C – seminal vesicle – secretes nutrient fluid to add to sperm (6)
- 2.1.3 Erection is the swelling of the penis (when sexually aroused)
 Ejaculation is when the penis releases semen (2)



(3 + 3)

- 2.2 2.2.1 The vagina (1)
- 2.2.2 Research done in South Africa by Durban professors (2)
- 2.2.3 In a male dominated (patriarchal) society, if male refuses to use a condom, then at least the woman has some protection (3)
- 2.2.4 Answer explanation (3)
- 2.2.5 Take personal responsibility for safe sex; if sexually active do regular testing; other reasonable answer (Not – use a condom) (4)

[30]

QUESTION 3

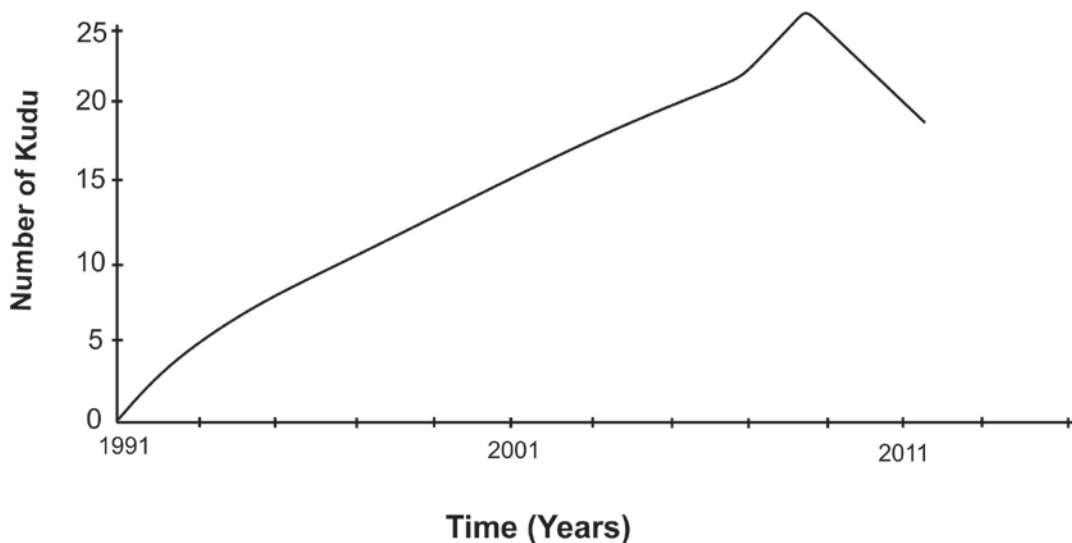
- 3.1 3.1.1 1 hour (2)
- 3.1.2 the glucose ingested was absorbed from the intestines into the blood (3)
- 3.1.3 140 mg per 100 cm³ (2)
- 3.1.4 High glucose stimulates cells in the pancreas to release insulin which travels to the liver where glucose is converted to glycogen therefore removing it from the blood stream. max 4 (4)
- 3.1.5 Glucose level too low stored glycogen in liver converted to glucose / by hormone glycogen, and released into the blood. max 3 (3)

- 3.2 3.2.1 Endocrine organ – pituitary gland
 Messenger(s) – FSH LH
 Target area – follicle (4)
 - 3.2.2 FSH causes the follicle develops into a Graafian follicle /oogenesis and LH causes it to rupture and then the follicle develops into a Corpus Luteum which produces progesterone. (4)
 - 3.2.3 The high progesterone levels in the blood stops the production of FSH and LH in the pituitary gland and therefore another follicle does not develop. (4)
 - 3.3 Opinion 1 logical justification; opinion 2 logical justification (4)
- [30]**

QUESTION 4

- 4.1 1992 (1)
- 4.2 Kudu are a group of the same animal species that live in a particular area/live on the fenced farm (2)
- 4.3 4.3.1 lack of water; predation (2)
- 4.3.2 predation by the black eagles competition for food with the eagles / disease (2)
- 4.3.3 Factor; benefits to the herd; benefits to the farmer, e.g. farmer could cull selected animals; the herd numbers would stay within the carrying capacity so there would be sufficient food /so some do not starve to death or reduced intra-specific competition/old and sick animals removed so the strong animals breed; he has a healthy herd and meat products can be sold/feed farm workers (5)
- 4.4 4.4.1

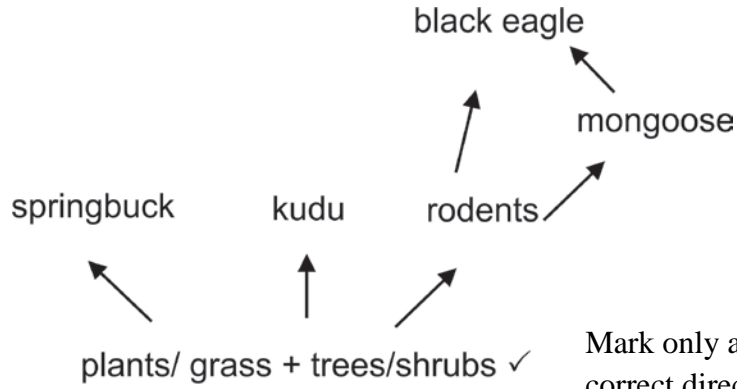
Kudu population over 20 years



(4)

- 4.4.2 19 – 21 animals (1)
- 4.4.3 E.g. Very good rains (in 2005/2006) so there was more food and therefore more calves survived or any other reasonable explanation. (2)

4.5 4.5.1



Mark only awarded if arrows in correct directions

Example of a Farm food web

- 4.5.2 None Springbuck are vegetarian/grazers and mongoose eat eggs and small animals (3)
 - 4.5.3 Opinion clear and logical reasons to back up opinion (2)
- [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 a census is a waste of time and money ...	I DO NOT think a census is a waste of time and money ...
Content: thoroughness	Source A paragraph 3 Source D paragraph 1 + 2	Source A paragraph 2 + 4 Source B paragraph 1 + 2
Support argument	Source B paragraph 3 + 4 Source C paragraph 1 Source E paragraph 3	Source E paragraph 2
Argument against noted	Source B paragraph 1 + 2 Source E paragraph 2	Source B paragraph 3 + 4 Source D paragraph 1 + 2 Source E paragraph 3

[20]

Total: 150 marks

QUESTION 5 Rubric

	1 mark	2 marks	3 marks	4 marks
Content: Thoroughness	<ul style="list-style-type: none"> Up to 1/3 of potential detail in sources cited, (e.g. 1 to 4 facts) 	<ul style="list-style-type: none"> About half of potential detail in sources cited, (e.g. 4 to 8 facts from sources) 	<ul style="list-style-type: none"> All main topics in sources covered About ¾ of potential detail in sources cited, (e.g. 9 to 12 facts =11 + 1 original fact*) One instance of significant information beyond the sources. 	<ul style="list-style-type: none"> All main topics covered Source detail very close to full potential At least (x) significant instances of information beyond the sources (e.g. 13 – 16 facts; 2 must be original and beyond the sources) = 11/14 + 2
Content: Relevance	<ul style="list-style-type: none"> Mostly digression and/or repetition 	<ul style="list-style-type: none"> Around half is digression and/or repetition 	<ul style="list-style-type: none"> Repetition mostly avoided Some minor digression Argument relevant 	<ul style="list-style-type: none"> Isolated incidences of minor repetition No digression Argument relevant
Supporting Argument, i.e. <u>for</u>	<ul style="list-style-type: none"> Writing consists of facts with little linkage or reasoning Reasoning incorrect 	<ul style="list-style-type: none"> Maximum if no clear decision to support Reasoning correct, but hard to follow Ordinary; some linkage is evident 	<ul style="list-style-type: none"> Supports the position Reasoning is clear Minor errors in flow Solid but not compelling; linkage sometimes missed 	<ul style="list-style-type: none"> Strongly supports a clear position Reasoning is very clear and succinct Flow is logical, showing evidence of clear planning Compelling with regular use of linking language
Fairness, i.e. Argument <u>against</u>	<ul style="list-style-type: none"> One counter opinion given. 	<ul style="list-style-type: none"> Two counter opinions given 	<ul style="list-style-type: none"> Three or more counter opinions given 	X
Position	<ul style="list-style-type: none"> <u>Clear decision made</u> 	X	X	X
Presentation	<ul style="list-style-type: none"> Writing is almost unintelligible Tone, language and terminology unscientific and exceptionally weak Introduction and/or conclusion not present 	<ul style="list-style-type: none"> Tone, language and terminology is weak Attempts at correct paragraphing Introduction and conclusion present, no matter how weak 	<ul style="list-style-type: none"> Tone is consistent and suited to scientific argument Good and appropriate language and terminology Mostly appropriate paragraphing Introduction and conclusion have merit 	<ul style="list-style-type: none"> Tone mature and suited to scientific argument Excellent and appropriate use of language and terminology Correct paragraphing with good transitions Interesting introduction, satisfying conclusion