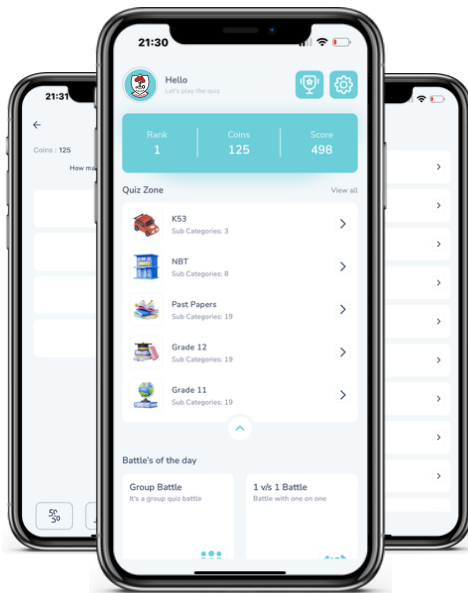




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GRADE 11

NOVEMBER 2020

**LIFE SCIENCES P2
MARKING GUIDELINE
(EXEMPLAR)**

MARKS: 150

This marking guideline consists of 12 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.
2. **If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **If whole process is given when only a part of it is required**
Read all and credit the relevant part.
4. **If comparisons are asked for but descriptions are given**
Accept if the differences/similarities are clear.
5. **If tabulation is required but paragraphs are given**
Candidates will lose marks for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**
Candidates will lose marks.
7. **If flow charts are given instead of descriptions**
Candidates will lose marks.
8. **If sequence is muddled and links do not make sense**
Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.
9. **Non-recognised abbreviations**
Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of the answer if correct.
10. **Wrong numbering**
If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.
11. **If language used changes the intended meaning**
Do not accept.
12. **Spelling errors**
If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.
13. **If common names are given in terminology**
Accept, provided it was accepted at the national memo discussion meeting.
14. **If only the letter is asked for but only the name is given (and vice versa)**
Do not credit.

15. **If units are not given in measurements**
Candidates will lose marks. Marking guideline will allocate marks for units separately.
16. **Be sensitive to the sense of an answer, which may be stated in a different way.**
17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.
18. **Code-switching of official languages (terms and concepts)**
A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.



SECTION A

QUESTION 1

- | | | | |
|-----|-------|--------------------------------|------------|
| 1.1 | 1.1.1 | B ✓✓ | |
| | 1.1.2 | B ✓✓ | |
| | 1.1.3 | C ✓✓ | |
| | 1.1.4 | A ✓✓ | |
| | 1.1.5 | D ✓✓ | |
| | 1.1.6 | B ✓✓ | |
| | 1.1.7 | C ✓✓ | |
| | 1.1.8 | C ✓✓ | |
| | 1.1.9 | C ✓✓ | 9 x 2 (18) |
| 1.2 | 1.2.1 | mutualism ✓ | |
| | 1.2.2 | yeast ✓ | |
| | 1.2.3 | phylogenetic tree ✓/ cladogram | |
| | 1.2.4 | cones ✓ | |
| | 1.2.5 | eutrophication ✓ | |
| | 1.2.6 | biodiversity ✓ | |
| | 1.2.7 | competitive exclusion ✓ | |
| | 1.2.8 | methane ✓ | 8 x 1 (8) |
| 1.3 | 1.3.1 | none ✓✓ | |
| | 1.3.2 | A only ✓✓ | |
| | 1.3.3 | B only ✓✓ | 3 x 2 (6) |
| 1.4 | 1.4.1 | Plantae ✓ | (1) |
| | 1.4.2 | Bryophytes ✓ | (1) |

- 1.4.3 B ✓
D ✓ (Mark first TWO only) (2)
- 1.4.4 Diagram 3 ✓✓ (Mark first ONE only) (2)
- 1.4.5 Diagram 3 ✓✓ (Mark first ONE only) (2)
- 1.5 1.5.1 (a) exponential growth ✓/accelerating/geometric/logarithmic (1)
(b) decelerating phase ✓ (1)
(c) death phase ✓/ extinction phase (1)
- 1.5.2 Logistic growth ✓ form (1)
- 1.5.3 Graph 2 ✓ (1)
- 1.5.4 (a) D ✓ (1)
(b) B ✓ (1)
- 1.5.5 Environmental resistance ✓ (1)
- 1.5.6 Population must adapt to their new environment ✓
The population is small ✓
Organisms need to become sexually mature ✓
Organisms need to find mates ✓ (Any 2) (2)

TOTAL SECTION A: 50

QUESTION 2

- 2.1 2.1.1 A – Protein coat ✓
B – RNA ✓ (2)
- 2.1.2 Antibiotics are used to kill living organisms ✓
Viruses are not living ✓ (2)
- 2.1.3 A person is given a weak strain of the germ ✓
the body will produce antibodies to fight the infection ✓
The antibodies will protect them against a new / stronger infection of
the same germ ✓ (3)
- 2.1.4 The vaccine would need to go through trial ✓
to ensure it has no negative effects ✓ (2)
- 2.2 2.2.1 Plasmodium ✓ (1)
- 2.2.2 mosquito ✓/ anopheles (1)
- 2.2.3 headache ✓
fever ✓
sweating ✓
chills ✓
muscular pain ✓
abdominal pain ✓
diarrhoea ✓
nausea and vomiting ✓
loss of appetite ✓
cough ✓
- (Mark first TWO only) (Any 2) (2)
- 2.2.4 Prevent getting bitten by mosquitoes ✓/ (or any example)
Get rid of mosquitoes ✓/(or any example) (2)
- 2.3 2.3.1 Plantae ✓ (1)
- 2.3.2 U – corolla ✓
V – calyx ✓ (2)
- 2.3.3 (a) R ✓ ovary ✓ (2)
- (b) S ✓ anther ✓ (2)
- 2.3.4 Insects ✓ (or example of an insect)/ wind / self-pollinated (1)

2.3.5 (a) Produces large amounts of food ✓/ easier farming as same treatment is given to whole crop (1)

(b) A pest population will increase rapidly and destroy the entire crop ✓ / increase in amount of pesticides used (1)

- 2.3.6
- Crops could be wiped out/attacked by disease if they are all of the same variety. ✓
 - Seed banks may store variations of crops that may be hardier to the disease and can replace those wiped out. ✓
 - A seed bank stores unusual or rare varieties that are not commercially farmed ✓ to maintain biodiversity ✓
 - A seed bank keeps cultures of plants that are not usually grown from seed ✓ in case they are needed to replace plants that go extinct in the wild ✓
 - Endemic species need to be preserved ✓ as they do not occur elsewhere in the world ✓
 - Endangered species may be preserved ✓ In case they go extinct in the wild ✓
 - Species may have the potential to provide us with substances of medicinal value ✓
 - They must be preserved so that they can be studied before they go extinct. ✓

(Mark first TWO only) (Any 2 x 2) (4)

2.3.7 asexual ✓ (1)

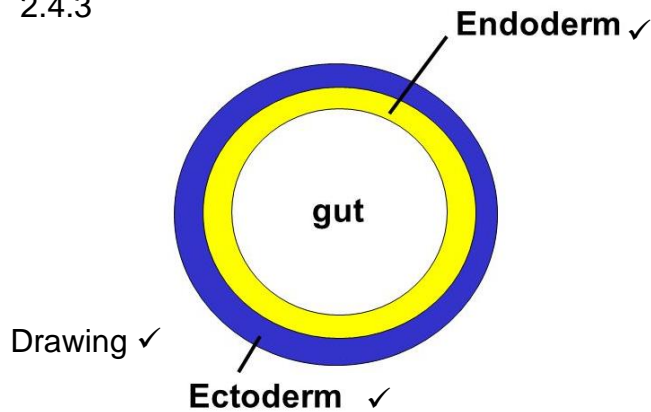
- 2.3.8
- Crop grows faster than from a seed ✓ therefore can produce potatoes in shorter time ✓
 - Do not have to wait to see if seed germinates ✓ as potato tubers are already germinating ✓

(Mark first ONE only) (Any 1 x 2) (2)

2.4 2.4.1 Cnidaria ✓ (1)

2.4.2 radial ✓ (1)

2.4.3

**Mark allocation:**

Heading ✓

Correct drawing ✓

Labels ✓✓

Body Plan of Cnidaria showing tissue layers ✓

(4)

2.4.4 They are radially symmetrical, ✓ therefore they can sense food/ danger equally well in all directions ✓

(2)

2.5 2.5.1 Yes ✓

(1)

2.5.2 It has a brain ✓

(1)

2.5.3 The body wall can work independently ✓ from the gut wall ✓

(2)

2.5.4 Due to separation of body wall and gut wall ✓/coelom diffusion is inadequate for transportation of food ✓/ waste / gases

(2)

- 2.5.5 - They eat decomposed/dead organic (plant) material. ✓/
Faeces of earthworms are rich in nutrients for plants and enrich the soil ✓
- They aerate the soil ✓/create underground tunnels
This helps to infiltrate the soil with water ✓ and helps the plants to grow their roots deeper

(4)

[50]

QUESTION 3

- 3.1 3.1.1 They can capture prey too fast for them ✓
and they can tackle prey too large for them ✓ (2)
- 3.1.2 predation ✓/ predator-prey (1)
- 3.1.3 A ✓ (1)
- 3.1.4 - Graph **A** increases / decreases after graph **B** ✓
- There are fewer individuals in **A** than **B** ✓
- There is less fluctuation in numbers in **A** than in **B**
(Any 2) (2)
- 3.1.5 Drought ✓
Flood ✓
(Any relevant factor but NOT tsunami / earthquake / hurricane)
(Mark first ONE only) (1)
- 3.1.6 Large numbers mean that an individual is less likely to be caught by a predator ✓/ prey have a better opportunity to escape.
As there are many eyes to spot the predator early ✓/ as running in herds may reduce the ability of a predator to focus on one individual to attack (2)
- 3.1.7 If the prey numbers increase the predator numbers will increase ✓
Causing the prey numbers to decrease ✓ which will cause the predator numbers to decrease ✓
- OR**
- The predator and prey numbers depend on each other ✓
This helps to control the population size in each group ✓
If one increases, the other one will cause it to decrease again ✓ (3)
- 3.2 3.2.1 (a) The increase in the average temperature on earth ✓ (1)
- (b) The access to enough ✓ nutritious ✓ food, at all times, ✓ by all people ✓
(Any 3) (3)
- 3.2.2 carbon dioxide ✓ (1)

- 3.2.3 - Changes in rainfall patterns ✓ cause
 - desertification ✓/ increased flooding ✓/ wildfires ✓
 - which increase soil erosion ✓ resulting in
 - fewer crops to be planted ✓/ lower crop yield ✓
 - there will be less food for livestock ✓
 - Higher environmental temperatures negatively affect livestock ✓/ crops
 - These factors decrease food availability ✓/ increase food prices (Any 5) (5)

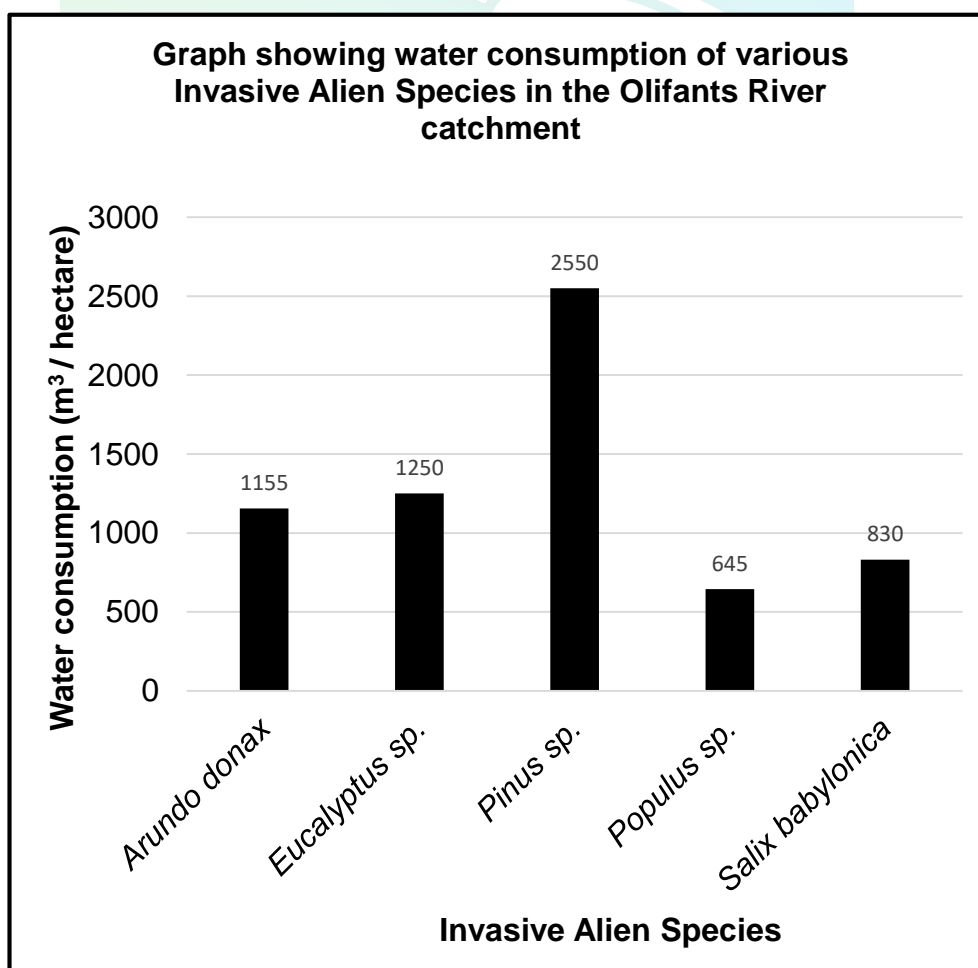
3.3 3.3.1 (a) Invasive alien species ✓ (1)

- (b) Water consumption ✓
 Area invaded by plants ✓ (2)

3.3.2 Quadrat ✓/ simple sampling (1)

3.3.3 $(2550 \text{ m}^3/\text{hectare} \times 752 \text{ hectares}) \checkmark = 1\,917\,600 \checkmark \text{ m}^3 \checkmark$ (3)

3.3.4



Marking guideline:

Caption (C) Both variables included	1 Mark
Type of graph (T)	1 Mark
X-axis label, bars of equal width (X)	1 Mark
Y-axis label and scale (Y)	1 Mark
Plotting of points (P)	0 Mark – No points plotted correctly
	1 Mark – 1 to 6 points plotted correctly
	2 Marks – all points plotted correctly

(6)

- 3.3.5 Biological control ✓/ example
Chemical control ✓/ example
Mechanical control ✓/example (3)

- 3.3.6 Do not plant exotic plants in your garden ✓
Remove exotic plants from your garden ✓
Form a hacking club to chop down alien trees ✓
(Mark first ONE only) (Any 1) (1)

- 3.4 3.4.1 The total count of all the individuals in a population ✓ (1)

- 3.4.2 Females ✓ (1)

- 3.4.3 (a) 1990 ✓ (1)

- (b) 1990 ✓ (1)

- 3.4.4 - There is a **decrease in birth rate** ✓ due to better education ✓/
access to birth control / improved lifestyle with fewer children /
better employment opportunities for women
- There is an **increase in life expectancy** ✓ due to better health
care available ✓
(Mark first TWO only) (Any 2 x 2) (4)

- 3.4.5 Useful for planning:
- health care ✓
 - social welfare ✓
 - education ✓
 - creating employment ✓
 - provision of resources ✓
 - housing needs ✓

(Mark first THREE only) (Any 3) (3)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

