

SENIOR SECONDARY IMPROVEMENT PROGRAMME 2013



GRADE 12

LIFE SCIENCES

LEARNER HOMEWORK SOLUTIONS

The SSIP is supported by



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LEARNER HOMEWORK SOLUTIONS

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SOLUTIONS TO HOMEWORK: SESSION 12**TOPIC: LIFE PROCESSES IN PLANTS AND ANIMALS – GENERAL REPRODUCTION AND PLANT REPRODUCTION****QUESTION 1**

- | | | |
|------|-------|-------|
| 1. B | 6. B | 11. C |
| 2. D | 7. A | |
| 3. D | 8. C | 12. D |
| 4. A | 9. B | |
| 5. A | 10. A | |

[12]**QUESTION 2**

- 2.1 The flowers with petals attracted more insects✓ for pollination✓ than the flowers without petals/ attracts pollinating✓ agents✓/ pollinators✓✓

OR

The flowers without petals may not have attracted insects✓ for pollination✓/pollinating✓ agents✓/pollinators✓✓

OR

The presence of petals prevents✓ wind from blowing most of the pollen away✓

OR

The absence of petals will allow✓ wind to blow most of the pollen away✓ **(Any 2)** (2)

- 2.2 Some of the pollen tubes that developed were from the same flower✓/self-pollination occurred and only make little growth into the style✓/not all pollen tubes reach the ovary/does not fertilise the ovum/ovule

OR

The contents of some pollen tubes✓ may be non-functional✓

OR

More pollen tubes to increase✓ chances of fertilisation✓ (2)

- 2.3 Repeat the investigation and use the average✓
 Increasing the size of the sample✓
 Use the same size flowers✓
 Use the same colour flowers✓
 Use the flowers of the same apple tree✓
 Ensure that all the flowers are pollen-free at the beginning of the investigation✓
 The number of flowers with or without petals must be the same✓
 Allow the same number of days for pollination✓/prevention of pollination/
 fertilisation to take place
 Keep all environmental factors constant✓
 Increase the period of the investigation✓

Any (Mark first THREE only)**(7)****[11]**

SOLUTIONS TO HOMEWORK: SESSION 13**TOPIC: HUMAN REPRODUCTION****QUESTION 1**

1.

A

2. C

2. C

4. C

5. D

6. B

7. A

8. C

9. C

10. A

11. A

12. A

13. B

14. D

15. B

16. B

17. D

18. C

19. C

20. B

(20 x 1) [20]

QUESTION 2

1 E✓

2 G✓

3 F✓

4 I✓

5 A✓

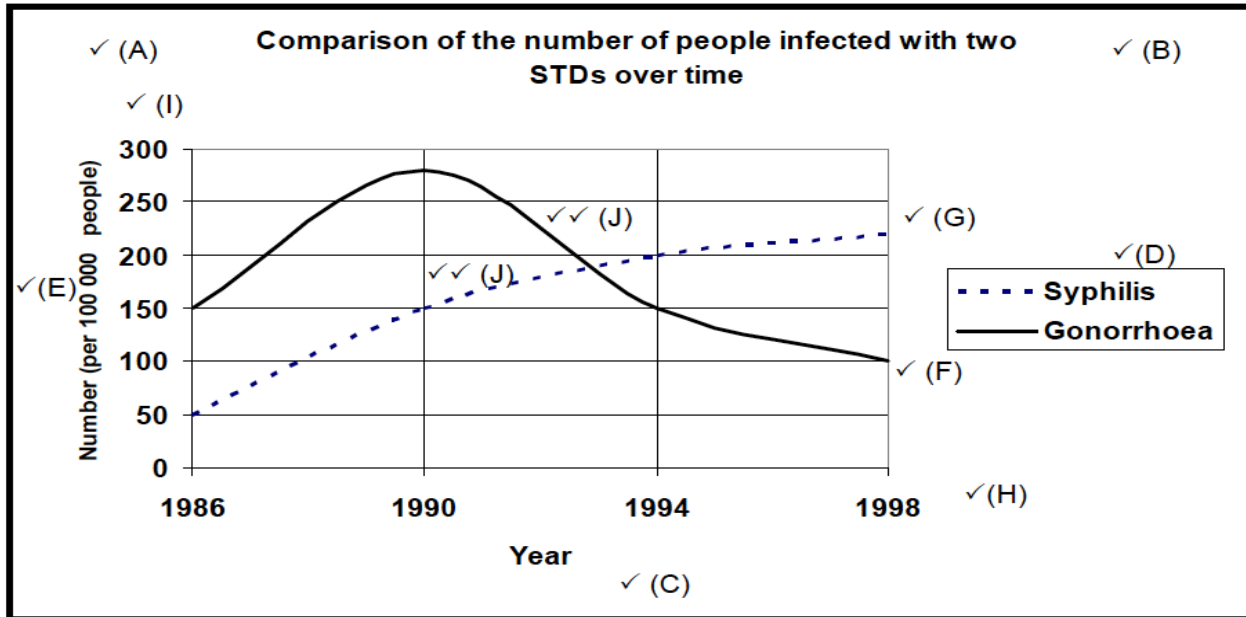
6 D✓

[6]

QUESTION 3

SOLUTIONS)

3.1



Marking Rubric:

A	Correct type of graph	1
B	Title of graph	1
C	Correct label for X-axis	1
D	Graphs labelled/key provided for 2 graphs	1
E	Correct label for Y-axis including unit	1
F	All points joined for graph A	1
G	All points joined for graph B	1
H	Appropriate scale for X-axis	1
I	Appropriate scale for Y-axis	1
J	Drawing of the graphs	1 – 1 to 2 points plotted correctly 2 – 3 to 5 points plotted correctly 3 – 6 to 7 points plotted correctly 4 – all 8 points plotted accurately

(13)

3.2 Syphilis – the number of infections has increased ✓ from 1986 to 1998

Gonorrhoea – the number of infections has increased ✓ from 1986 to 1990 and then decreased ✓

(3)
[16]

SOLUTIONS TO HOMEWORK: SESSION 14

TOPIC: POPULATION ECOLOGY: SPECIES, POPULATION AND COMMUNITY, POPULATION SIZE, HUMAN POPULATION AND SOCIALISATION

QUESTION 1

- | | | | | | |
|----|---|-----|---|-----|---|
| 1. | C | 7. | D | 13. | A |
| 2. | C | 8. | C | 14. | A |
| 3. | A | 9. | D | 15. | A |
| 4. | C | 10. | C | 16. | B |
| 5. | C | 11. | A | | |
| 6. | A | 12. | B | | |

(16 x 1) [16]

QUESTION 2

- 2.1. Area of the lawn = $L \times B$ (1)
= $10 \text{ m}^2 \times 10 \text{ m}^2$ (1)
= 100 m^2 (1)

- 2.2. Average number of dandelion plants in 1 quadrant

$$= \frac{9 + 7 + 1 + 3 + 10}{5} \quad (1)$$

$$= 6 \quad (1)$$

Estimated number of dandelion plants on the whole lawn surface:

$$= \frac{\text{number of plants in sample areas}}{100} \times \frac{\text{habitat area}}{\text{sample area}} \quad (1)$$

$$= 6 \times 1 \quad (1)$$

$$= 600 \text{ dandelions} \quad (1)$$

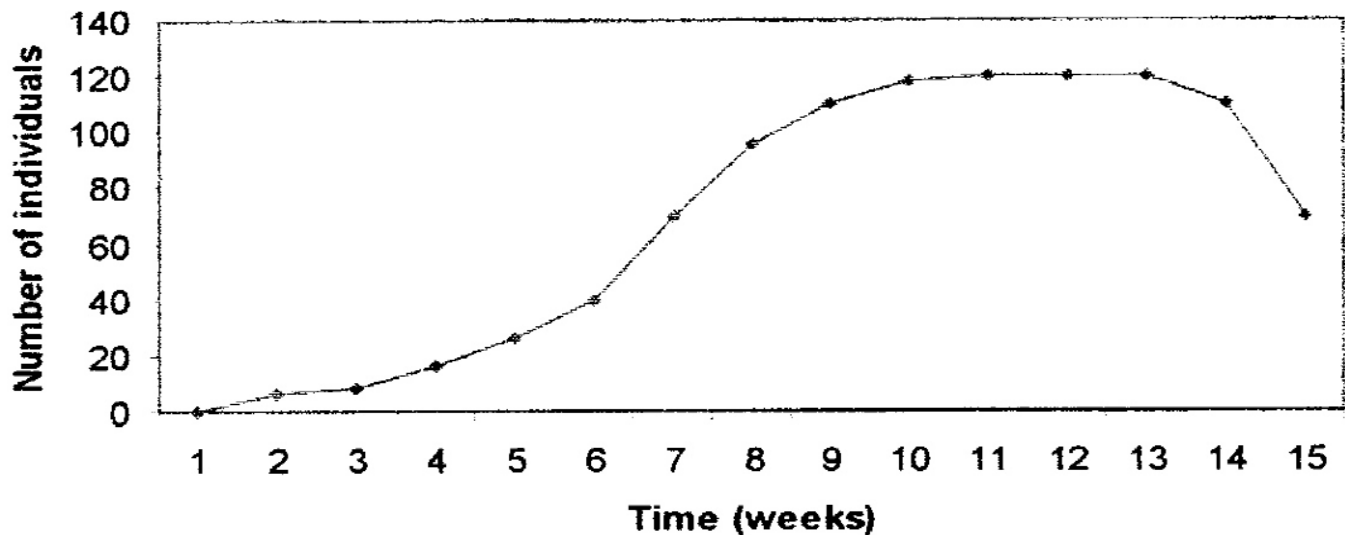
- | | |
|---------------------------|-----|
| 2.3.1. sampling | (1) |
| 2.3.2. Indirect technique | (1) |
| 2.4. | |

- Quadrants must be selected at **random**. ✓
 - Each individual inside each quadrant must be **accurately counted**. ✓
 - Quadrants must cover at least **10% of the total area**. ✓
 - The **total area** must be known. ✓
- (4)

[14]

SOLUTIONS TO HOMEWORK: SESSION 15**TOPIC: INTERACTION IN A COMMUNITY – PREDATION, COMPETITION, SYMBIOSIS AND ECOLOGICAL SUCCESSION****QUESTION 1**

1.1.

Growth curve of species A**Marking of graph:**

A	Correct type of graph	1
B	Title / heading for graph	1
C	Correct label for X-axis	1
D	Correct label for Y-axis	1
E	All points are joined	1
F	Appropriate scale for X-axis	1
G	Appropriate scale for Y-axis	1
H	Drawing of the graph	2 – all points plotted correctly 0 – points not plotted correctly

(9)

1.2. **Week 1 to 3:** Growth is slow because the animals are adjusting / acclimatising ✓
– lag phase. ✓

Week 4 to 8: Increase in population – accelerated growth phase. ✓ There is enough food, shelter and space/ there are no limiting factors. ✓

Week 8 to 10: Deceleration phase ✓ - population growth is slower ✓

Week 11 to 13: Equilibrium phase ✓ - carrying capacity is reached ✓

Week 14 to 15: Death phase ✓ - environmental resistance causes population size to decrease ✓

(10)

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SESSION 15

(LEARNER HOMEWORK SOLUTIONS)

- 1.3. Intra-specific ✓ Organisms of the **same** species are competing. ✓ (2)
- 1.4. 120. ✓ The natality rate = the mortality rate ✓ (2)
- 1.5. A predator will cause the population to decrease ✓ and give the environment a chance to improve the carrying capacity. ✓ (2)
- [25]**

QUESTION 2

- 2.1. Competition for food and water ✓ / competition for space ✓ / spread of disease ✓ (Any two) (2)
- 2.2. Drought / cold / veldfires ✓ (Any one) (1)
- 2.3. Intraspecific competition ✓
Competition for resources between individuals ✓ belonging to the same species ✓ (3)
- 2.4. K-strategy ✓
They produce few offspring ✓ / supply good parental care ✓ (Any one) (1)
- 2.5. 30 000 springbuck ✓ (1)
- 2.6. Overgrazing ✓ / trampling which causes soil erosion ✓ (Any one) (1)
- 2.7. Reintroduce predators ✓ / cull the springbuck ✓ / hunting ✓ / relocate springbuck to other areas for a period ✓ (Any two) (2)
- 2.8. Regulating the springbuck population naturally ✓ to ensure a stable population ✓
- OR**
- Predators would have been a stabilising factor ✓
(Only 1 mark for the second option.) (2)
- 2.9. Secondary succession ✓✓ (2)

[16]