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MEMO

Life Science 12

Week 12

***PLEASE can you mark this worksheet as accurately as possible

Question 1 [4]

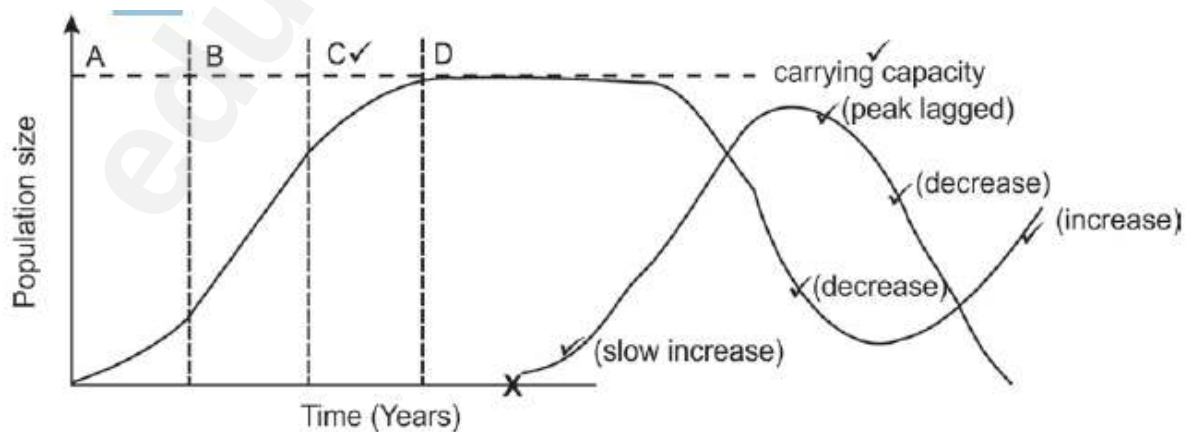
- a- Natality
- b- Immigration
- c- Mortality
- d- Emigration (4)

Question 2 [8]

1. 11 (1)
2. $\frac{11 \times 40}{0.5} = 880$ (3)
3. $\frac{35 \times 40}{0.5} = 1\ 400$ (2)
4. Randomly thrown more quadrants (2)

Question 3 [18]

1.



(2)

1

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2. The maximum number of individuals that a habitat/ecosystem can supply with resources (2)

3. The springbuck are getting accustomed/settling into the new environment /low population density so more difficult to find mates/the number of reproducing individuals is small. (1)

4. (a) C

(b) D

(c) B (3)

5. Drought/fire/drought reduces grazing or other (2)

6. If a pride of lions moved into the same area as the springbuck in the year X on the graph:

(a) continue drawing the expected graph line of the springbuck population

showing the effect of the lions in the area over time on the graph above. (2)

(b) draw in the expected line on the graph above to show the lion population over time. (3)

(c) Predator- prey/ predation (1)

(d) Yes, by preying on the springbok, numbers are reduced which prevents overgrazing (2)

Question 4 [22]

1. A group of organisms of the same species ✓ occupying a definable area ✓ close enough for random interbreeding. ✓ (3)

2. Shark nets ✓ /Baited hooks ✓ (culling) /Poaching ✓ /Overfishing ✓ / Limited genetic diversity. (max 4)

3. Reduction in smaller fish ✓ causing decline in the Cape Seal population ✓ which is prey of great white shark. ✓ (3)

4. Loss of hybrid vigour ✓ as no new genes coming into gene pool. Shrinking gene pool/small gene pool/become genetically similar ✓ This makes them more prone to disease ✓/genetic mutations finding expression. Inability to adapt to changing environment (3)

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5. Census needs to count each individual or mark recapture requires a sample, ✓ which is very hard to find as sharks live deep under sea, ✓ so difficult to find and have large territory ✓ so impossible to cover whole area. Move fast/time consuming/mark recapture less expensive or resource/reliability of counting because no tagging (3)
6. Declare protected areas where no fishing allowed. ✓
 Lift shark nets and find other methods to protect bathers. ✓
 Introduce new individuals to existing populations to allow gene flow. ✓
 Start shark breeding programmes. ✓
 Start seal breeding programmes
 Greater consequences for shark fishing - legislation
 Education programmes about extinction
 (Mark only first 2) (2)
- 7 (a) Predation/Predator-prey ✓ (1)
 (b) A ✓ dotted line (1)
 (c) Lower numbers ✓ and graph lags behind prey graph ✓ or prey has higher numbers and peaks/drops before predator (2)

Question 5 [10]

1. diurnal live in herds adults have large horns used for protection (max 2) (2)
 2. interspecific (1)
 3. food / grass water predators disease space availability of mates (max 3) (3)
 4. (a) population decrease more prone to predation at night / less access to water (2)
- (b) reduce hunting allow hikers only at certain times of day / year strict hiking trails
 reduce agricultural impact by having more reserves limited hunting season Accept
 other reasonable suggestions, e.g. limiting visitors to the area (max 2) (2)

Question 6 [6]

1. Two
2. Prey
3. Don't
4. Exceeds
5. Increase
6. Increase (6)

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Question 7 [8]

1.
$$P = \frac{M \times C}{R}$$
$$= \frac{20 \times 30}{5}$$
$$= \frac{600}{5}$$
$$= 120 \text{ fish in the dam (4)}$$

- 2.
- Marking must not damage the fish or affect its movement
 - Fish must have time to mix freely with the other fish
 - No fish must be caught and taken out or others put in.
 - Any other well explained reason (3x2=6)

[Total: 76 Marks]