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

Question 1 [8]

1. Large number of animals in hunt allows them to take down prey larger than themselves.

Pack can develop strategies for the hunt involving spreading out over large area to trap prey.

Pack can attack animal from all sides, which confuses prey ensuring successful kill. Single breeding pair ensures that most of pack is in peak physical condition for hunting.

Nursemaids left to look after pups ensures that hunting pack is focused on hunt and not on protecting young.

Individuals take turns in leading the chase ensuring that the whole pack does not tire. Communication within pack leads to the ability to hunt as a collective force. (Any 3) (3)

2. The herd keeps the young in the centre to protect them

The herd has many eyes and ears to detect danger of predators

The sheer size of the herd will intimidate predators

When the herd moves, all the individual movements cause a confusing mass, which does not allow predator to focus. (Any 1 × 2) (2)

3. B – African Wild Dog

Number of predators always lower than prey.

Predator graph lags behind prey graph. (3)

Question 2 [13]

- 1.(a) Death + Emigration (2)

- 2.(a) Wanted to increase population/war had reduced their population. (2)

(b) Smaller economically active sector of population/workforce to support rest/ young and aged, so current pop will have to prepare for this in terms of infrastructure; OR less females so not enough partners for men leads to changing culture, overflowing orphanages. (max 2 for each point) (4)

- (c) Incentive scheme rather than punishment.

Education campaign re family planning. (2)

- (d) C Reduced birth rate due to contraception. Pyramid narrows at bottom. (3)

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Question 3 [7]

1 (a) 1-2 billion (1)

(b) 10–11 billion (1)

2. Increase food production (from GMO) , improved agriculture / food preservation

Find cures for disease/better medical care ,vaccines

Build high-rise buildings ,Area cleared

Better sanitation

Desalination of water

Better utilisation of non-renewable energy sources (3)

3.3.3 We need to slow down population growth ; before it is too late/ If we continue to grow at such a rapid rate/exponentially ; otherwise we will hit extinction phase ;/many people will die/we will not be able to provide food for everyone. (2)

Question 4 [15]

1 (a) Secondary. (1)

(b) Started with soil / not bare rock / soil present / plants grew here before / no lichens and moss / annual plants first colonisers. (1)

2. Hardwood trees. (1)

3. Living space; sunlight; water; soil nutrients; increase in competition; increase in diseases; pests.(2)

4 YES – long term with changing plant communities increase in nutrients in soil would come animals increase in food increase in shelter.

OR NO – long period of time before climax community / stable community pioneer community has low biodiversity seeds from crops present lead to different communities. (3)

5 (a) Pioneer coloniser. (1)

(b) Community – group of populations/species in an area

Ecosystem includes interaction with environment / groups of communities interacting with each other. . (2)

(c) (i) Early – short one growing season / 2 – 12 months.

(ii) Late – longer more than a year. (2)

(d) Reduces competition with parent plants lifespan of early stage plants short if dispersed widely better coverage of new areas. (2)

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Question 5 [3]

1. less developed

Two reasons: typical pyramid-shaped (triangular) graph high birth rate small numbers of elderly broad base and narrow apex low life expectancy (3)

Question 6 [9]

1. 1=pioneer
2=Intermediate
3=Climax (3)
2. 4= D (pioneer)
5=C (Intermediate)
6=A (Intermediate)
7=E (Intermediate)
8=F (Climax)
9=B (Climax) (6)

Question 7 [9]

Caste	Function
1. Reproductives	Queen lays eggs King mates with queen Young reproductives can replace king and queen (4)
2. Soldiers	Defend the colony (2)
3. Workers	Collect food, dig tunnels, feed and care for the young, feed the soldiers and the king and queen. (3)

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Question 8 [15]

1. 'Infertile' means an organism cannot reproduce (1)
- 2.

Social Organisation	Bees	Termites	Wild dogs
Similarity	All these species have social organisation of different jobs/communication systems/hierarchy systems for survival. Or they all have co-operative care of the young or other reasonable answer		
Differences	1. Dominant queen 2. One reproductive queen in a hive /workers, drones, queen/ /worker bees change their job as they age/ male dies after mating/polygamous	1. Dominant king + queen 2. Many reproductive pairs in a colony / workers, king, queen, soldiers, reproductive (alates)/maintain one job through life/male dies after mating/polygamous	1. Alpha male + female 2.1 Breeding pair per pack / pups, adolescents, hunters, alpha pair/ job may change with age of dog/male does not die after mating/ monogamous

(2 + 6)

3. The wild dogs work together to hunt and kill the prey which greatly improves the chance of a successful hunt. Cooperative tactics include one dog standing visible to the prey which causes it to run in a certain direction towards other waiting dogs; prey is tired but the hunters are rested so greater chance of a kill. / Dogs take turns leading the hunt to ensure that the lead dog is fresh since the leader uses some energy in the chase/ once prey is down a few dogs attack together making it more difficult for prey to escape and decreasing the chance of a dog being injured. Numbers of animals protect the kill from theft. Alpha female can remain at den and look after pups. Pups feed first improving the survival rate. Vocal communication during the hunt improves the kill rate. Any 4 (4)
4. Low mortality in the young other adults feed the pups / parental care is high / with few pups for cooperative group to protect so young survive. (Makes reference to graph and give a reason or make two references to graph .) (2)

[Total: 79 Marks]