

1. A study into animal welfare in a zoo was carried out by observing the behaviour of some of the animals in their enclosures.

The behaviours observed are shown in the table.

Animal	Behaviour
Lion	Continuously pacing back and forward
Sun bear	Feeding young
Spider monkey	Subordinate monkey grooming the dominant male
White rhino	Repeatedly chewing bars of enclosure
Spotted hyena	Sleeping in the sun

2. Which two animals show signs of poor welfare?

- A Spotted hyena and lion
- B White rhino and spider monkey
- C Lion and white rhino
- D Sun bear and spider monkey

3. Most food in Scotland is produced using intensive farming to increase yield and profit.

Which row in the table identifies the costs and benefits of converting an intensive farm into a free-range farm?

	Cost	Benefit
A	requires more land	less labour intensive
B	requires more land	animals sold at higher price
C	more labour intensive	requires less land
D	animals sold at lower price	requires less land

4. The statements below refer to behaviour sometimes displayed by lions kept in captivity.

- 1 Repetitive chewing on cage bars
- 2 Excessive licking of body
- 3 Continually pacing backwards and forward

Which are examples of stereotypy?

- A 1 only
- B 1 and 2 only
- C 2 and 3 only
- D 1, 2 and 3

5. The list describes observed behaviour of pigs on a farm.

- 1 Stereotypic flicking of the head
- 2 Repeated wounding of other pigs by biting
- 3 Lying in a position which does not allow suckling

Which of these behaviours indicate poor animal welfare?

- A 1 and 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

6. Livestock production generates less food per unit area of land than crop production because

- A energy is gained between trophic levels of the food chain
- B livestock production degrades natural resources
- C energy is lost between trophic levels of the food chain
- D it is easier to grow crops than raise livestock in difficult habitats.

1.

Group	Average time spent feeding (minutes)	Average time spent in misdirected behaviour (minutes)
A	12.4	43.4
B	21.5	11.8

- (a) Identify the group in which animal welfare was poorer and justify your answer. 1

Group _____

Justification _____

- (b) Give another behavioural indicator of poor animal welfare not already mentioned. 1

Salmon can be reared in fish farms where they are sometimes fed small fish such as anchovies. Anchovies feed on animal plankton which feed on plant plankton.

2.

- (i) State the term used to define the ability of the human population to access food of sufficient quantity. 1

- (ii) In terms of energy explain the advantage to the human population of consuming anchovies rather than salmon. 1

3. Give one reason why intensive farming is often used instead of free range farming. 1

4. Livestock are fed cereal crops such as barley and wheat.
Explain how food security would be increased if humans ate more cereal crops instead of eating meat. 2

5. a) Intensively farmed chickens show abnormally low levels of activity.
State the term used to describe this behaviour. 1

- b) State an advantage to humans of intensive farming. 1

6. Areas of cleared rainforest can be used for cattle farming or crop production.
Suggest why less habitat would have to be cleared if it was only used for crop production. 1

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B	21.5	11.8

Identify the group in which animal welfare was poorer and justify your answer.

Group A

(a)

Justification Spend longer in misdirected behaviour

(b)

Give another behavioural indicator of poor animal welfare not already mentioned.

Sterotypy/apathy/hysteria/failure to parent or sexual behaviour

2.

Salmon can be reared in fish farms where they are sometimes fed small fish such as anchovies. Anchovies feed on animal plankton which feed on plant plankton.

(i) State the term used to define the ability of the human population to access food of sufficient quantity.

Food Security

(ii) In terms of energy explain the advantage to the human population of consuming anchovies rather than salmon.

Anchovies are at a lower trophic level

Energy is lost between trophic levels

3

Give one reason why intensive farming is often used instead of free range farming.

1

Cheaper/higher profit/less land or labour

4.

Livestock are fed cereal crops such as barley and wheat.

Explain how food security would be increased if humans ate more cereal crops instead of eating meat.

2

Crops are at a lower trophic level

Energy is lost between trophic levels

1 5.

Intensively farmed chickens show abnormally low levels of activity. State the term used to describe this behaviour.

1

apathy

State an advantage to humans of intensive farming.

1

Cheaper/higher profit/less land or labour

6.

Areas of cleared rainforest can be used for cattle farming or crop production.

Suggest why less habitat would have to be cleared if it was only used for crop production.

1

Crops produce more food per unit area OR energy is lost between trophic levels