Week 4 Learning Check
Biology Foundation

Name: _____

Class: _____

Date: _____

Time: **30 minutes**

Marks: **31 marks**

Comments:

Q1. Hormones control parts of the reproductive system.

(a) Complete the sentences.

Choose answers from the box.

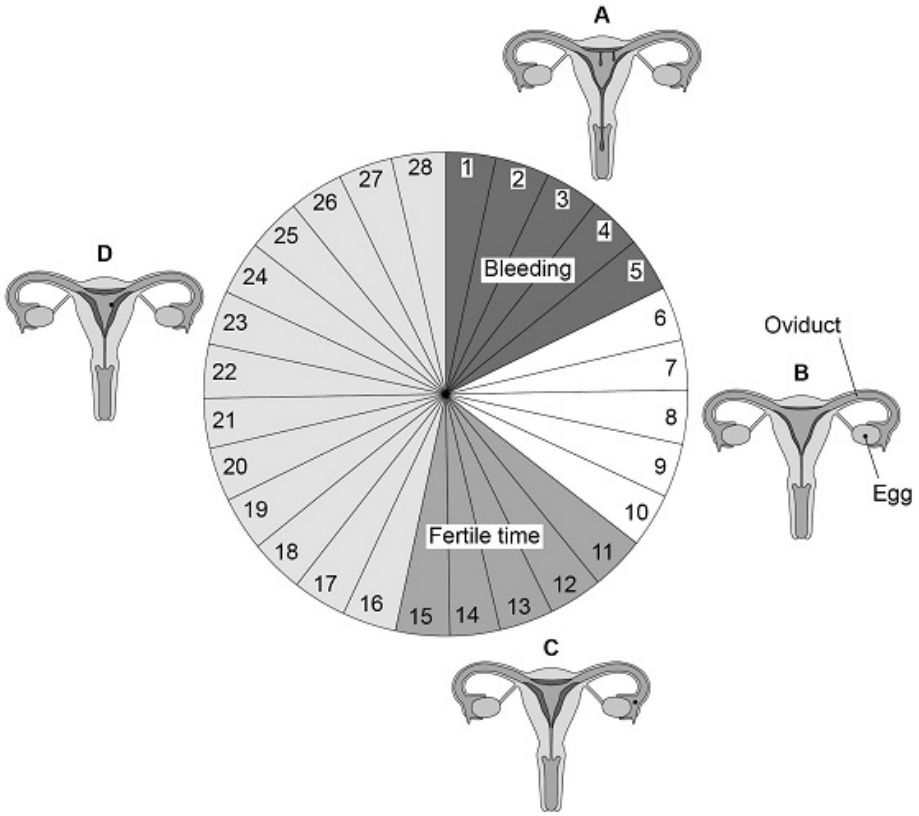
amylase	**insulin**	**oestrogen**	**protease**	**testosterone**

The main reproductive hormone in males is _____.

The main reproductive hormone in females is _____.

(2)

The diagram shows the stages of the menstrual cycle and the approximate time each stage takes in days.



(b) Calculate the percentage of days in the cycle when bleeding occurs.

Use the diagram.

_____

_____

_____

Percentage = _____%

(2)

(c) Suggest why the number of days of bleeding shown in the diagram above is only an estimate.

_____

_____

(1)

(d) What is happening during stage **B**?

Tick (✓) **one** box.

The egg is being fertilised	☐
The egg is maturing	☐
The uterus lining is breaking down	☐

(1)

(e) Towards the end of stage **C** an egg is released.

Which organ is the egg released from?

_____

(1)

(f) Name the hormone that stimulates the release of an egg.

_____

(1)

(Total 8 marks)

Q2.

A group of students did a survey to find out where woodlice were found in a garden.

Their results are shown in the table below.

Habitat	**Number of woodlice**
On top of the soil	1
Under dead, dry leaves	6
Under dead, wet leaves	15

(a) From these results, which **two** environmental conditions do woodlice prefer?

Tick (✓) **two** boxes.

Light ☐

Dark ☐

Warm ☐

Wet ☐

Dry ☐

(2)

(b) What piece of equipment could be used to measure **one** of the environmental conditions you gave in (a)?

_____

(1)

(Total 3 marks)

Q3.

Some students estimated the population of daisy plants in a field.

This is the method used.

1. Place a quadrat randomly on the field.
2. Count and record the number of daisy plants in the quadrat.
3. Repeat steps 1 and 2 another four times.

(a) How could the students have made sure the quadrats were placed randomly?

_____

_____

(1)

(b) Describe the piece of equipment called a quadrat.

_____

_____

(1)

The table shows the results.

Quadrat number	Number of daisy plants
1	8
2	11
3	4
4	6
5	16
Mean	**X**

(c) Calculate mean value **X**.

_____

_____

X = _____ daisy plants

(1)

(d) The field is a rectangle 100 m wide and 150 m long.

Calculate the area of the field.

_____

Area = _____ m^2

(1)

(e) The quadrat used by the students had an area of 1.0 m^2

Estimate the population of daisy plants in the field.

Use your answers to part **(c)** and part **(d)**.

_____

_____

_____

_____

Estimated population = _____ daisy plants

(2)

(f) More daisy plants grew in some parts of the field compared to other areas of the field.

Give **two** biotic factors that may affect where daisy plants grow in the field.

1 _____

2 _____ **(2)**

(g) The students noticed that the daisy plants growing near a building were smaller.

Explain why smaller daisy plants grew near the building.

_____

_____

_____

_____

(2)

(Total 10 marks)

Q4. Animals and plants are adapted in different ways in order to survive.

(a) Plants may have to compete with other plants.

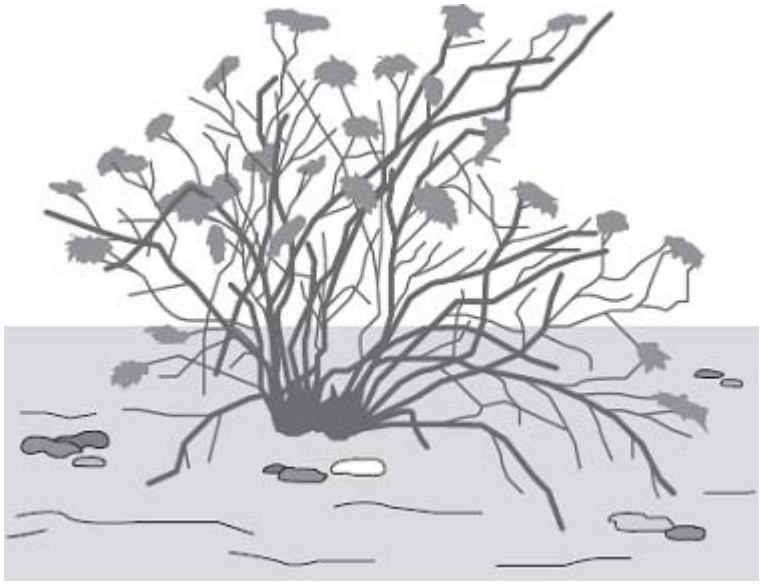
(i) Name **two** things for which plants compete.

1. _____

2. _____

(2)

(ii) The drawing shows a creosote bush.



This bush lives in a desert.

The creosote bush produces a poison that kills the roots of other plants.

How does this poison help the creosote bush to survive in the desert?

_____

_____ **(1)**

(b) The photograph shows an insect called a katydid.

By Ltshears (Own work) [Public domain], via Wikimedia Commons

The katydid is preyed on by birds.

How does the appearance of the katydid help it to survive?

_____

_____

_____

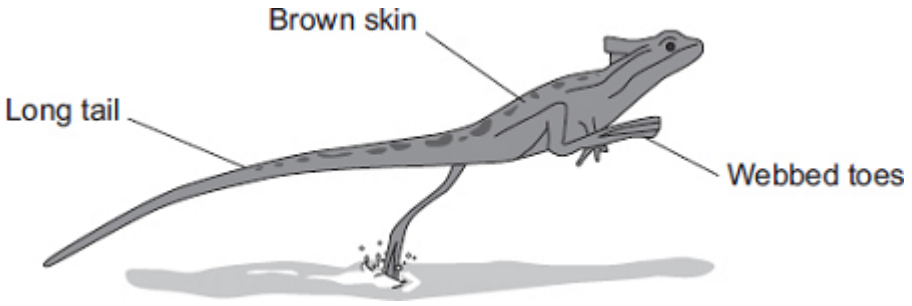
_____

(1)

(Total 4 marks)

Q5.

The picture shows a basilisk lizard. Some of the adaptations of the lizard are labelled.



Basilisk lizards are often found resting on branches of trees that grow next to water.
Basilisk lizards can run across the surface of the water.

(a) Draw **one** line from each adaptation of the lizard to the advantage of the adaptation.

Adaptation	Advantage
Toes on the back feet are webbed	For camouflage on branches of trees
Long tail	Helps the lizard to balance when running
Brown skin	Warning colours to deter predators
	Increases surface area in contact with the water

(3)

(b) Suggest **one** advantage to the basilisk lizard of being able to run across the surface of the water.

_____

_____

(1)

(c) Animals, such as lizards, compete with each other.

Give **two** factors that animals compete for.

Tick (✓) **two** boxes.

- Oxygen ☐
- Food ☐
- Territory ☐
- Light ☐

(2)

(Total 6 marks)

Q1.

(a)

must be in this order

allow phonetic spelling for both

(male) testosterone

1

(female) oestrogen

allow estrogen

1

(b)

*an answer of 17.8571429 % or fewer significant figures with correct rounding scores **2** marks*

$\frac{5}{28} \times 100$

1

17.8571429 (%)

1

(c) any **one** from:

- length of bleeding / menstruation / cycle varies
- could be affected by contraceptive pill / patch / injection / implant / IUD

allow menopause

1

(d) the egg is maturing

1

(e) ovary / ovaries

allow phonetic spelling

*do **not** accept oviduct*

ignore left / right

1

(f) LH / luteinising hormone

1

(g) egg cannot travel to uterus

or

sperm cannot reach the egg

1

(therefore) cannot be fertilised

1

(h)

*do **not** accept female sterilisation*

any **one** from:

- oral contraceptives

allow 'pill'

- condom

allow barrier method

- (progesterone) injection / implant / skin patch
  allow hormonal method
- diaphragm / cap
- IUD / coil
- abstinence
- male sterilisation / vasectomy

1

[11]

Q2.

(a) Dark

Wet

2

(b) Possible answers:

*must match one of the conditions given in **(a)***

allow ecf

allow for sensor: meter / detector / probe

humidity / moisture sensor
light sensor
thermometer
temperature sensor

1

[3]

Q3.

(a) description of any correct method to achieve randomness e.g. random number generator

ignore throwing quadrat / frame

1

(b) frame / square

allow rectangle

ignore internal squares / grid

1

(c)

mark with parts (d) and (e)

9(.0)

1

(d)

mark with parts (c) and (e)

15 000 (m^2)

1

(e)

mark with parts (c) and (d)

*answer must be consistent with answers in parts **(c)** and **(d)***

9.0 × 15 000

1

135 000

1

(f) any **two** from:
- herbivores / animals
- competing (with other plants)
- (human) trampling / playing
- (plant) disease / pathogen
- mowing

allow being eaten

2

(g) less light / water

ignore Sun

allow fewer magnesium (ions)

1

for photosynthesis

1

or

fewer ions / nitrates / minerals (1)

allow less nutrients

so fewer proteins (1)

idea of fewer only needed once to gain both marks

*allow fewer ions / nitrates / minerals / nutrients so less growth for **2** marks*

[10]

Q4.

(a) (i) any **two** from:

ignore oxygen / food / sun / carbon dioxide

- light
- water
- space
- nutrients / ions / minerals / named

*accept two named minerals / ions for **2** marks*

2

(ii) less competition for water

ignore space / light / food

or

more water / nutrients / minerals available

1

(b) camouflage / same shape as leaf / looks like a leaf

allow 'blends in'

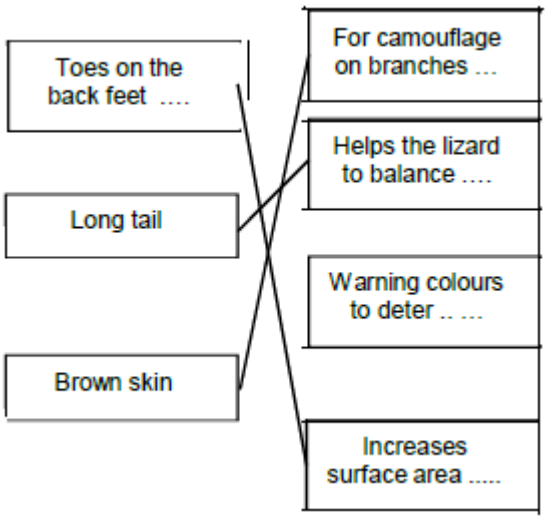
ignore colour

1

[4]

Q5.

(a)



one mark for each line

*do **not** award mark for an adaptation if lines are drawn from it to more than one advantage*

3

(b) escape (predators)

accept faster than swimming

allow chase prey

allow it stops them from drowning

1

(c) food

1

territory

1

*deduct **one** mark for each tick in excess of two*

[6]

Examiner reports

Q1.

(a) Around 77% of students could name both main reproductive hormones.

(b) A quarter of students could calculate this percentage.

(c) Most students could describe why the number of days bleeding shown in the diagram is just an estimate. Vague answers such as 'all women are different' were insufficient.

(d) Around 58% of students knew the egg was maturing at this stage.

(e) Around 56% of students knew the egg is released from the ovary.

(f) Few correct answers were seen. Students could use the abbreviation LH, or state luteinising hormone. Phonetic spelling is always credited unless there is possible confusion with another term. A range of incorrect hormones and enzymes were stated, plus other terms such as period, menopause and oviduct.

(g) Students found this question challenging. The most common responses gained one mark rather than two because students were not giving an explanation.

(h) The majority of students could state one form of contraception.

Q2.

(a) Most students gained full marks for this question, with almost all students gaining at least 1 mark. The most common correct response was "Wet"; and "Warm" was the most common distractor.

(b) The most common response was "thermometer", which usually was not creditworthy as students had not selected "Warm" in part (a). The equipment students named had to match an environmental condition that they had ticked. There were some unusually named pieces of equipment, for example light measurers. Other items that were not creditworthy included cameras, quadrats, measuring cylinders and pipettes.

Q3.

(a) As the question was assessing the student's knowledge of how to achieve randomness, rather than just how to use a quadrat, answers about throwing quadrats did not gain credit. Because of this very few marks were awarded, as just 9% of students gave a method which would achieve randomness. Correct responses seen included:

- using a random number generator
- selecting random coordinates before going outside
- rolling dice to determine number of steps
- using the last three digits of each group member's phone number to create the random numbers.

(b) A description of a quadrat was required for this question. It was well answered with most students referring to 'square' in their response. Two thirds of students gained

the mark.

The most common insufficient answers referred to ‘grids’ or ‘internal squares’ only, which failed to describe the outside structure.

(c) 80% of students were able to correctly calculate the mean value.

(d) 84% of students were able to calculate this simple area question.

(e) As this question was marked with parts (c) and (d), any incorrect answers for mean or area were allowed to be carried forward. 37% of students gained full credit, with the most common error being to divide the area by the mean rather than multiply them.

(f) A large proportion of students either confused biotic factors with abiotic factors or totally disregarded this part of the question. Many answers gave two abiotic factors, most often ‘sunlight’ and ‘rain’. Just 5% of students gave two biotic factors, and a further 20% gave one. Most commonly credit was given for ‘trampling’ and ‘eaten by animals/insects’.

(g) Half of students identified less sunlight or less water as the reason daisy plants were smaller. A further quarter of these students went on to link this to lack of photosynthesis causing less growth. Answers referring to no light or no water did not gain credit. If a student gave less nutrients or less minerals this was accepted for the first mark but they needed to link this to more proteins to gain the second mark and so this was very rarely seen.

Q4.

(a) (i) A large majority of students were able to name two factors for which plants compete. Weaker students often gave ‘Sun’ which did not gain credit.

(ii) A majority of students realised that the poison would help the creosote bush in its competition with other plants, but weaker students often associated the poison produced by the roots with the killing of animals that ate the leaves.

(b) Almost all students recognised that the katydid was camouflaged by its leaf-like appearance.

Q5.

(a) The majority of students were able to correctly link the adaptations of the lizard to the advantages. Very few students compromised answers by drawing conflicting lines, although a small minority only added one line in total, perhaps through only half reading the instruction.

(b) Most students gave answers about the lizard being able to escape from predators or other animals. A few gave answers about being able to capture prey more easily. Unfortunately some students confused ‘predators’ with ‘prey’ and offered ‘escaping from prey’ which gained no credit. A very small number of students referred to running ‘being faster than swimming’, or ‘to prevent drowning’. These were also awarded a mark. Some students did not answer the question asked and gave information about the lizard’s adaptations, often choosing one of these from part (a).

(c) The great majority of students chose ‘food’ and ‘territory’ and thus gained two marks.