

Characteristics and classification of living organisms practice questions

14 questions • 35 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 35

Characteristics and classification Spec 1.1, 1.2

1 Which of these is an example of excretion? [1 mark]

- A. ☐ A dog passing faeces
- B. ☐ Removal of urea in urine
- C. ☐ Taking glucose into a cell
- D. ☐ Release of enzymes into the gut

2 Define each of these characteristics of living organisms. (a) sensitivity (b) growth (c) excretion (d) nutrition [4 marks]

3 A horse and a donkey can mate to produce a mule. A mule cannot produce offspring. Explain why a horse and a donkey are classified as different species. [2 marks]

- 4** The scientific name of the lion is *Panthera leo*. (a) State what the two words in a scientific name represent. [2] (b) State one reason why scientists use an internationally agreed system of naming. [1] **[3 marks]**

- 5** The table shows a dichotomous key for five animals. (a) Use the key to identify an animal with no feathers, no fur, no fins and moist skin. [1] (b) Name the animal in the key that has fins. [1] (c) A student wants to add a tortoise (dry scaly skin and a shell) to the key. Describe how step 4 should be changed. [2] **[4 marks]**

Key to five animals		
Step	Feature	Result
1a	Has feathers	Sparrow
1b	Does not have feathers	Go to step 2
2a	Has fur	Rabbit
2b	Does not have fur	Go to step 3
3a	Has fins	Trout
3b	Does not have fins	Go to step 4
4a	Skin is dry and scaly	Lizard
4b	Skin is moist and smooth	Frog

The table shows how similar part of a gene is to the same gene in species X. The values are practice data. Using the table, identify the species that is most closely related to species X. Explain your answer.

Similarity of one gene to species X	
Species	Similarity to species X / %
P	98
Q	82
R	71

Which statement describes what modern classification systems aim to do?

- A. ☐ Group organisms only by where they live
- B. ☐ Reflect evolutionary relationships
- C. ☐ Group organisms by size
- D. ☐ Place every organism in a different kingdom

Features of organisms

Spec 1.3

Which pair of features is found in plant cells but not in animal cells?

- A. ☐ Nucleus and cytoplasm
- B. ☐ Cell wall of cellulose and chloroplasts
- C. ☐ Cell membrane and mitochondria
- D. ☐ Glycogen store and cell wall

9 The table describes four vertebrates. Name the vertebrate group of each animal.

[4 marks]

Features of four vertebrates	
Animal	Features
P	Feathers, two wings and a beak; lays hard-shelled eggs
Q	Moist, smooth skin; lays jelly-covered eggs in water
R	Body covered with fur; young fed on milk from mammary glands
S	Wet scales, fins and gills; lays soft eggs in water

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10 The table describes three arthropods. Name the arthropod group of each animal.

[3 marks]

Features of three arthropods	
Animal	Features
X	Three body parts; three pairs of legs; one pair of antennae; two pairs of wings
Y	Two body parts; four pairs of legs; no antennae
Z	Long body of many similar segments, each with one pair of legs

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11 State two features that all arthropods share.

[2 marks]

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12

Supplement

[3 marks]

Describe three features of organisms in the fungus kingdom.

13

Supplement

[1 mark]

Which pair of features is found in a monocotyledon?

- A. ☐ One cotyledon and parallel leaf veins
- B. ☐ Two cotyledons and parallel leaf veins
- C. ☐ One cotyledon and a network of leaf veins
- D. ☐ Two cotyledons and a network of leaf veins

14

Supplement

[3 marks]

(a) State the two parts that make up a virus. [2] (b) A single-celled organism has a cell wall but no nucleus. State the kingdom in which it is placed. [1]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (1)

2. [4]

- (a) the ability to detect and respond to changes in the internal or external environment (1)
- (b) a permanent increase in size and dry mass (1) reject increase in size alone
- (c) the removal of the waste products of metabolism and substances in excess of requirements (1)
- (d) the taking in of materials for energy, growth and development (1)

3. [2]

- a species is a group of organisms that can reproduce to produce fertile offspring (1)
- the offspring (mule) is sterile / infertile / cannot reproduce (1)

4. [3]

- (a) the first word is the genus (1)
- the second word is the species (1)
- (b) so that scientists in all countries use the same name for an organism / avoids confusion caused by different local names / different languages (1)

5. [4]

- (a) frog (1)
- (b) trout (1)
- (c) 4a (dry and scaly skin) now leads to a new step 5 instead of to lizard (1)
- step 5 is a contrasting pair such as 'has a shell' → tortoise and 'does not have a shell' → lizard (1)

6. [3] Supplement

- P (1)
- its DNA base sequence is the most similar (1)
- so it shares a more recent common ancestor with X / is most closely related (1)

7. [1] Supplement

B B (1)

8. [1]

B B (1)

9. [4]

- P bird (1)
- Q amphibian (1)
- R mammal (1)
- S fish (1)

10. [3]

- X insect (1)
- Y arachnid (1)
- Z myriapod (1) reject centipede / millipede (an example, not the group)

11. [2]

- hard exoskeleton / outer skeleton (1)
- jointed legs (1)
- segmented body (1)
- Max 2

12. [3] Supplement

- cell walls made of chitin (1)
- no chloroplasts / cannot photosynthesise (1)
- body made of threads / hyphae (1)
- feed by absorbing nutrients from other organisms (1)
- reproduce using spores (1)
- store carbohydrate as glycogen (1)
- Max 3

13. [1] Supplement

A A (1)

14. [3] Supplement

- (a) protein coat (1)
- genetic material (1)
- (b) prokaryote (1) allow bacteria