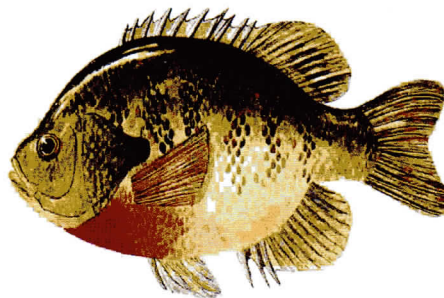


### 3.5.3 Biology Paper 3 (231/3)

- 1 Using the pictures of animals provided below, complete the construction of the dichotomous key by filling the blank spaces. (13 marks)



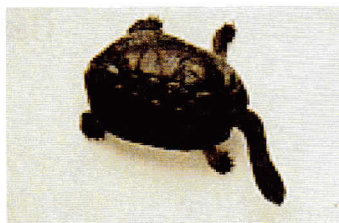
Eagle



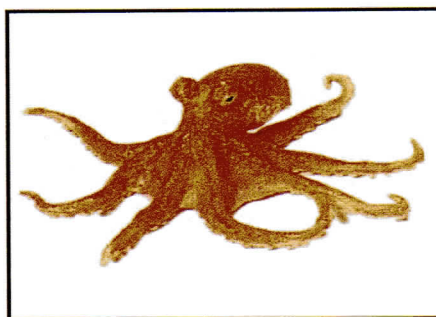
Fish



Earthworm



Tortoise



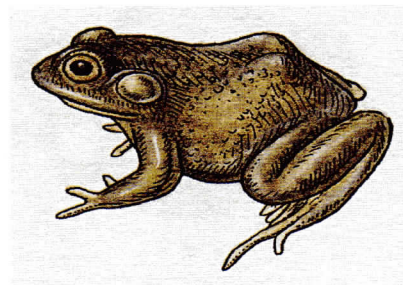
Octopus



Starfish



Spider

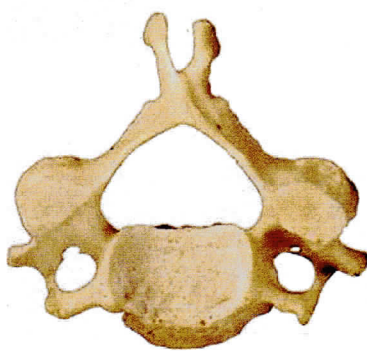


Frog

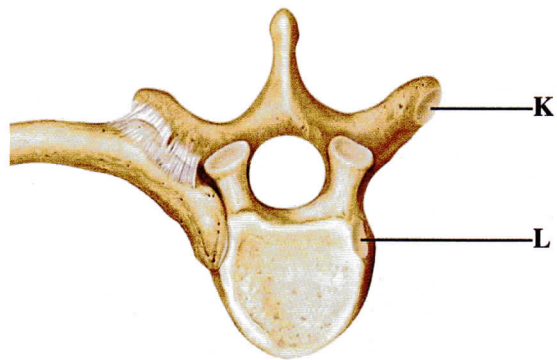
- |    |     |  |                |
|----|-----|--|----------------|
| 1. | (a) | Animals with a backbone .....                  | <b>go to 2</b> |
|    | (b) | Animals without a backbone .....               | _____          |
| 2. | (a) | Animals with wings .....                       | _____          |
|    | (b) | Animals without wings .....                    | _____          |
| 3. | (a) | Animals which live in water all the time ..... | _____          |
|    | (b) | Animals which live in water some time .....    | _____          |
| 4. | (a) | Animals with scales .....                      | _____          |
|    | (b) | Animals without scales .....                   | _____          |

5. (a) Animals with legs .....
- (b) Animals without legs .....                      **go to 7**
6. (a) Animals with six legs .....                      **Butterfly**
- (b) Animals with eight legs .....
7. (a) Animals with a shell .....                      **Snail**
- (b) Animals without a shell .....
8. (a) Animals with a jelly-like body .....
- (b) Animals without a jelly-like body .....
9. (a) Animals with a segmented body .....
- (b) Animals without a segmented body .....                      **Octopus**

**2** Below are pictures of three mammalian vertebrae.



**F**



**G**



**H**

- (a) Identify the type of vertebra labelled
- F** ..... (1 mark)
- G** ..... (1 mark)
- H** ..... (1 mark)
- (b) Label **five** parts of the vertebra labelled **H**. (5 marks)
- (c) Name the articular facets labelled **K** and **L**.
- K** ..... (1 mark)
- L** ..... (1 mark)
- (d) How does each of the parts of a vertebra enable a mammalian skeleton to carry out its functions? (4 marks)

**3** You are provided with a 250 ml beaker, four test tubes, solutions labelled **D** and **E**, iodine and Benedict's solutions.

Half fill the beaker with the hot water provided to create a hot water bath.

- (I) Label the four test tubes as follows:
- (i) test tube 1, **D+Iodine**
- (ii) test tube 2, **D+E+Iodine**
- (iii) test tube 3, **D+Benedict's solution**
- (iv) test tube 4, **D+E+Benedict's solution**
- (II) Put 1 cm<sup>3</sup> of solution **D** in each of the four test tubes.
- (III) To the **D+Iodine** test tube, add one drop of iodine solution and shake to mix.
- (IV) To the **D+E+Iodine** test tube, add 1 cm<sup>3</sup> of solution **E** and two drops of iodine solution. Shake to mix.
- (V) To the **D+Benedict's solution** test tube, add 1 cm<sup>3</sup> of Benedict's solution and shake to mix.
- (VI) To the **D+E+Benedict's solution** test tube, add 1 cm<sup>3</sup> of solution **E** and 1 cm<sup>3</sup> of Benedict's solution. Shake to mix.
- (VII) Observe the changes in each of the four test tubes.
- (VIII) Put all the four test tubes in the hot water bath and observe carefully for about five minutes.

- (a) Record the observations and conclusion for each of the four test tubes in the table below. (8 marks)

NO	TEST TUBE	OBSERVATION	CONCLUSION
1	D+Iodine		
2	D+E+Iodine		
3	D+Benedict's solution		
4	D+E+Benedict's solution		

- (b) What was the role of each of the following in the experiment?
- (i) solution E (1 mark)
  - (ii) hot water bath. (1 mark)
- (c) Give the identity of E in human beings. (1 mark)
- (d) Explain the observations made on the reagents tested with Benedict's solution. (2 marks)