**1.** (a) Define the term *clade*.

......................................................................................................................................

......................................................................................................................................

(1)

(b) Distinguish between analogous and homologous structures, giving an example of each.

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

(2)

(c) The table below lists five animals along with four morphological characteristics. A plus sign (+) indicates that the animal has this characteristic while a minus sign (–) indicates that the characteristic is absent.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Animal** | **Jaws** | **Limbs** | **Hair** | **Placenta** |
| Salamander | + | + | – | – |
| Mouse | + | + | + | + |
| Jellyfish | – | – | – | – |
| Koala | + | + | + | – |
| Salmon | + | – | – | – |

Based on the features above, a student constructed a cladogram. State the names of the organisms missing in the following cladogram.



(2)

(d) Describe the major anatomical features that define humans as primates.

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

(2)

(Total 7 marks)

**2.** (a) Outline the properties of RNA that may have allowed it to play a role in the origin of life.

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

(2)

(b) Outline the evidence provided by DNA for the common ancestry of living organisms.

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

(2)

(c) The cladogram below shows the classification of species A to D. Deduce how similar species A is to species B, C and D.



......................................................................................................................................

......................................................................................................................................

......................................................................................................................................

(2)

(d) Suggest **two** reasons for using cladograms for the classification of organisms.

......................................................................................................................................

......................................................................................................................................

(2)

(Total 8 marks)