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CLASSIFIED

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BIOLOGY-0610/31, 32, 33
TOPIC-Classification
& KINGDOMS

1 Vertebrate animals are grouped into a number of **classes**.

Complete the sentences by naming each of the vertebrate classes that are described.

(a) A vertebrate with scaly skin and no legs could be either a ....

or a .... [2]

(b) A vertebrate with lungs and hair is a .... but if it has feathers

instead of hair it is a .... [2]

[Total: 4]

1 Four of the classes of vertebrates and five possible descriptions of these classes are shown below.

Draw a straight line to match each class of vertebrate to its description.

class of vertebrate	description

body with naked skin, two pairs of limbs

bird

body with hair, two pairs of limbs

fish

body with feathers, one pair of wings

mammal

body with scales, with fins

reptile

body with scaly skin, two pairs of limbs or no limbs

Fig. 1.1

[Total: 4]

0610/02/O/N/06
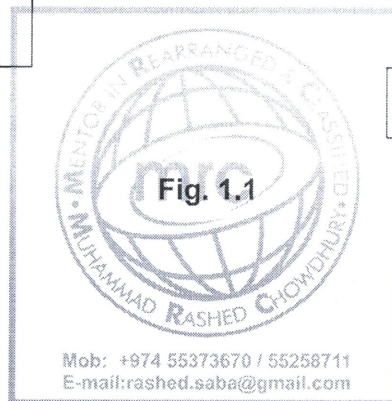
1   Select from the list the name of the group of animals that best fits each description.

Write your choice in Table 1.1.

arachnid   bird   crustacean   insect

mammal   mollusc   nematode

Table 1.1

description of animal	group
a hard exoskeleton and more than 4 pairs of legs	
a hard shell and a slimy muscular foot	
one pair of wings and a beak	
one pair of wings and has skin covered with fur	
two pairs of wings and one pair of antennae	

[5]

[Total: 5]

5 (a) Define the term *species*.

....

....

....

....[2]

(b) Table 5.1 shows the names of vertebrate groups and some of their characteristics.

Place a tick in the boxes to show if the characteristic is commonly present in that group.

The characteristics of the fish group have been done for you.

Table 5.1

characteristic	group of vertebrates				
	fish	amphibians	reptiles	birds	mammals
have feathers over most of the body					
have scales over most of the body	✓				
lay eggs	✓				
maintain a constant body temperature					
young are fed on milk					

[5]

[Total: 7]

1   Non-living things, such as a car, often show characteristics similar to those of living organisms.

(a) State which characteristic of a living organism matches each of the descriptions linked to a car.

(i)   burning fuel in the engine to release energy

.... [1]

(ii) headlights that switch on automatically in the dark

.... [1]

(iii) filling the car's tank with fuel

.... [1]

(iv) release of waste gases

.... [1]

(b) Identify **one** characteristic of living things that is **not** carried out by a car.

.... [1]

[Total: 5]

1   Scientists found four new animal species living in the sea.

Features of the animals are described in Table 1.1.

Table 1.1

animal	description	group
A	body covered by hard exoskeleton more than five pairs of jointed limbs	
B	soft segmented body no obvious limbs present	
C	body covered in small scales gill slits and gills present	
D	scaly body two pairs of legs	

Identify the group to which each animal belongs.

Write your answers in Table 1.1.   [4]

[Total: 4]

1 Animals without backbones are classified into a number of groups.

Draw **one** line from each of the named groups to its description.

group

description

| annelids |

| hard, jointed exoskeleton, three pairs of jointed legs |

| insects |

| long cylindrical body, segmented, has bristles but no legs |

| molluscs |

| long cylindrical body, not segmented, no legs |

| myriapods |

| has soft body, head and muscular foot, most have a hard shell |

| nematodes |

| exoskeleton, segmented body, jointed legs on each segment |

[4]

[Total: 4]

1 (a) Fig. 1.1 shows a mammal.

Fig. 1.1

Describe two external features that occur in mammals but do **not** occur in other vertebrates.

1. ....

....

2. ....

.... [2]

(b) Fig. 1.2 shows an arthropod.
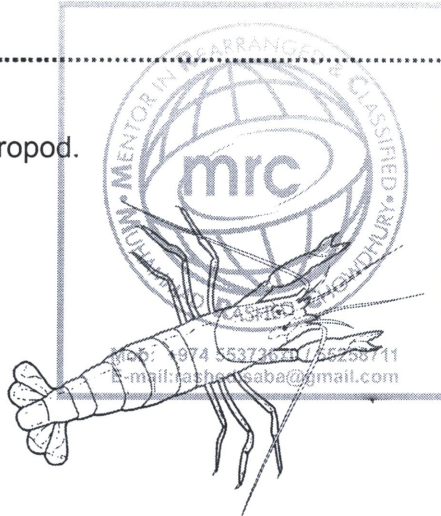
Fig. 1.2

Describe two external features that occur in all arthropods.

1. ....

....

2. ....

.... [2]

[Total: 4]

2 **(a)** Fig. 2.1 shows a bird.
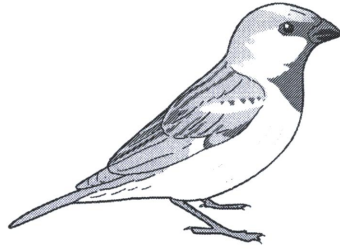
Fig. 2.1

Describe two external features that occur in birds but do **not** occur in other vertebrates.

1. ....

....

2. ....

.... [2]

(b) Fig. 2.2 shows an insect.
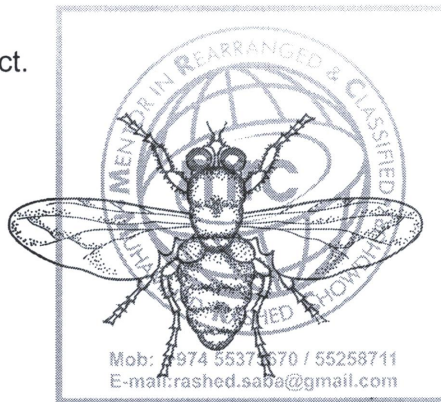
Fig. 2.2

Describe two external features that occur in insects but do **not** occur in other arthropods.

1. ....

....

2. ....

.... [2]

[Total: 4]

1   A remote-controlled submarine gathered a sample of mud from the bottom of the sea.

Fig. 1.1 shows an apparatus that was set up to investigate if the mud contained any living organisms.
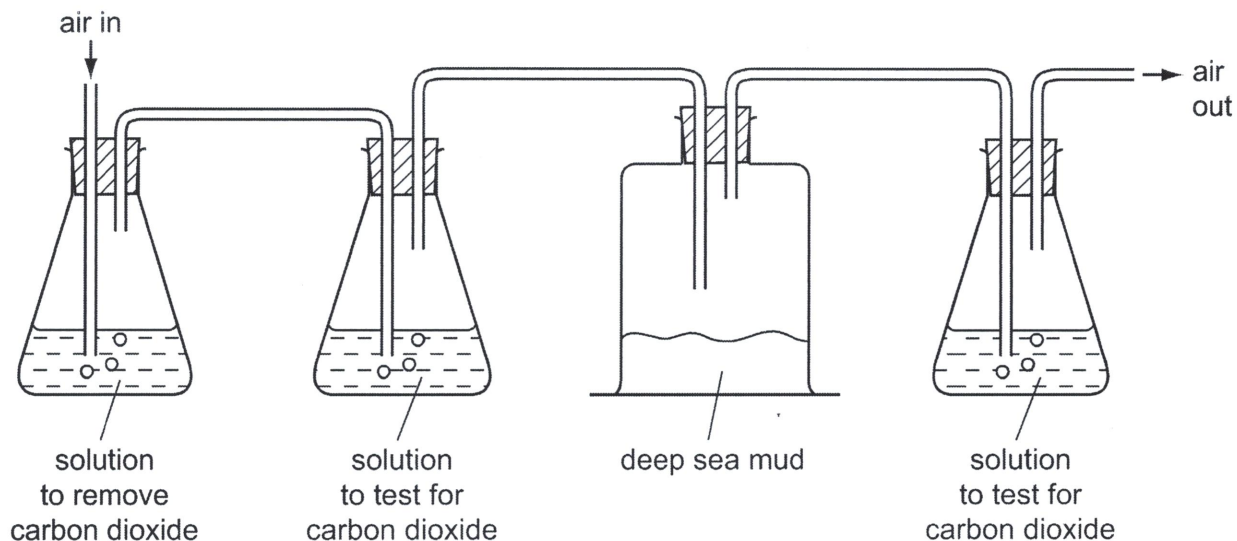

Fig. 1.1

(a) (i) Name a solution that could be used to test for carbon dioxide.

.... [1]

(ii) Carbon dioxide was detected coming from the mud.

Suggest the two characteristics of living organisms that could be linked to this observation.

1. ....

2. .... [2]

(b) List three other characteristics of living organisms.

1. ....

2. ....

3. .... [3]

[Total: 6]

1 (a) The binomial naming system used to identify all living things gives the Indian elephant a scientific name of *Elephas maximus*.

Which part of this name refers to the genus and which part refers to the species?

genus ....

species .... [1]

(b) The list gives the names of eight members of the cat family. The common or English name is followed by the binomial name.

Bobcat – *Lynx rufus*   **Cheetah** – *Acinonyx jubatus*   **Jaguar** – *Panthera onca*

European lynx – *Lynx lynx*   **Leopard** – *Panthera pardus*

Lion – *Panthera leo*   **Iberian lynx** – *Lynx pardinus*   **Tiger** – *Panthera tigris*

(i) State the common or English names of two members of the same genus.

1. ....

2. .... [2]

(ii) Name the genus that has only one species.

.... [1]

[Total: 4]

2 (a) Table 2.1 shows the percentage of haemoglobin that is inactivated by carbon monoxide present in the blood of taxi drivers in a city.

Table 2.1

city taxi drivers		percentage of haemoglobin inactivated by carbon monoxide
day time drivers	smokers	5.7
	non-smokers	2.3
night time drivers	smokers	4.4
	non-smokers	1.0

1 Vertebrates can be classified by their external features.

Complete the paragraph by using the name of a vertebrate class in each space.

Some vertebrates have scales all over their skin. If they also have nostrils that allow air into their lungs and two pairs of legs they are ....

Some vertebrates have wings. If their body is also covered in feathers they are ...., but if their body has fur they are ....

Vertebrates that do not have feathers, fur or scales on the outside of their body are

....

[4]

[Total: 4]

2   Table 2.1 shows some of the external features of the five classes of vertebrates.

Complete the table by placing a tick (✓) to indicate if each class has the feature.

Table 2.1

class of vertebrate	external ear flap	feathers or fur	scaly skin	two pairs of limbs
amphibians				
birds				
fish				
mammals				
reptiles				

[5]

[Total: 5]

3   Rain forests are the natural vegetation in areas with high rainfall.

Tropical rain forest is being cut down in many parts of the world to clear land for agriculture. The soil of the rain forest allows water to drain through it very rapidly.

Table 3.1 shows the yield of cotton crops, grown under three different conditions, on land cleared of rain forest.
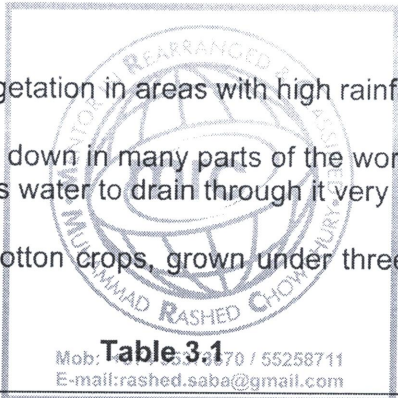
Table 3.1

years since the forest was cleared	yield of cotton / kg per hectare		
	no fertiliser added to the soil	fertiliser added to soil during year 1	chopped grass added to the soil during year 1
1	200	398	220
2	180	790	1460
3	120	700	980

(a) (i)   What happened to the yield of cotton over the three years if no fertiliser was added to the soil?

....

.... [1]

(ii) Suggest possible reasons for this change in the yield of cotton.

....

....

.... [2]

(b) (i) What happened to the yield of cotton when fertiliser was added to the soil in year 1?

....

.... [1]

(ii) Suggest why excessive quantities of fertiliser should not be added to the soil.

....

....

....

.... [2]

(c) Chopped grass added to the soil has little effect on the crop yield in year 1.
Suggest why it has much greater effect on the yield in years 2 and 3.

....

....

.... [2]

[Total: 8]
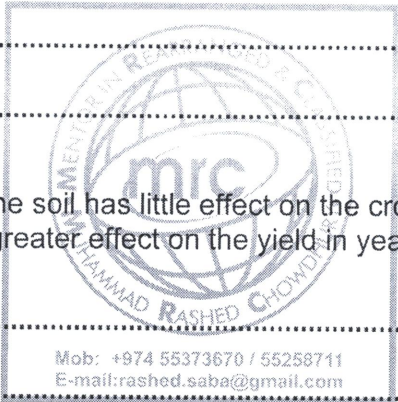
1   Fig. 1.1 shows a snake.
    A snake is a living organism and so shows the characteristics of life.
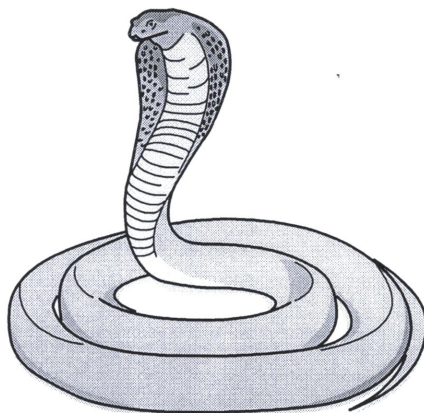   The snake feeds by catching small animals such as mice and rats.

Fig. 1.1

(a)   Complete Table 1.1 showing some of the characteristics of life for the snake.

Table 1.1

characteristic of life	definition
nutrition	obtaining nutrients for energy, growth and repair
	removal from an organism of toxic materials, the waste products of metabolism or substances in excess of requirements
reproduction	
	a permanent increase in size and dry mass by an increase in cell number or cell size or both

[3]

(b)   The snake is a reptile.

State **one** way that a reptile differs from a fish.

....[1]

[Total: 4]

1 Fig. 1.1 shows four different animals.

A   **B**
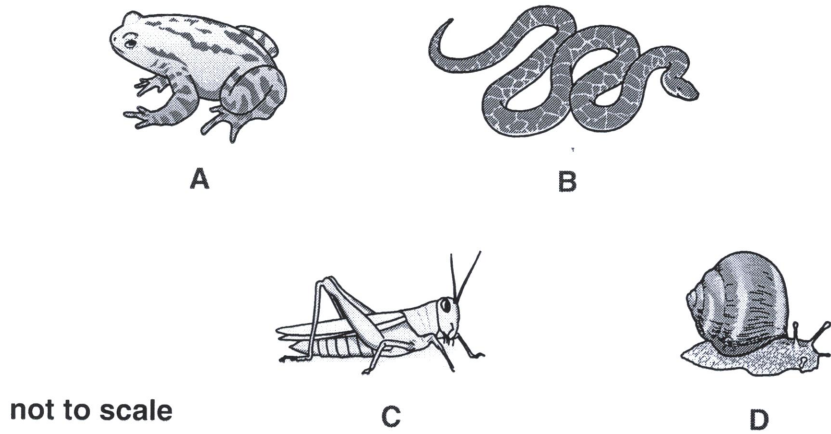
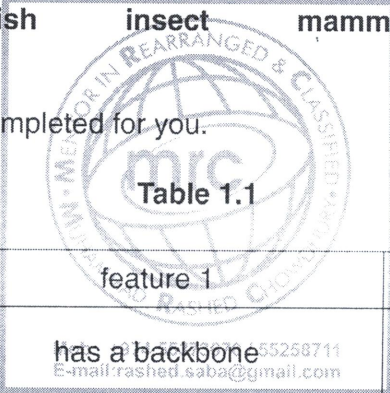**not to scale**   **C**   **D**

Fig. 1.1

(a) Classify each animal into its correct group choosing words from this list.

Write your answers in the '**group**' column of Table 1.1.

amphibian   **bird**   **fish**   **insect**   **mammal**   **mollusc**   **reptile**

[1]

One example has been completed for you.

Table 1.1

	group	feature 1	feature 2
A	amphibian	has a backbone	has slimy skin
B			
C			
D			

(b) Using phrases from the list, complete Table 1.1 by adding **two** features of each animal group, as shown for amphibians.

You may use each feature once, more than once or not at all.

has no backbone   has a backbone   has feathers   has fur

has gills   has scaly skin   has slimy skin   has a shell

has 8 legs   has 6 legs

[3]

[Total: 4]

1   Fig. 1.1 shows three vertebrates. Each is from a different class (group) of vertebrate.
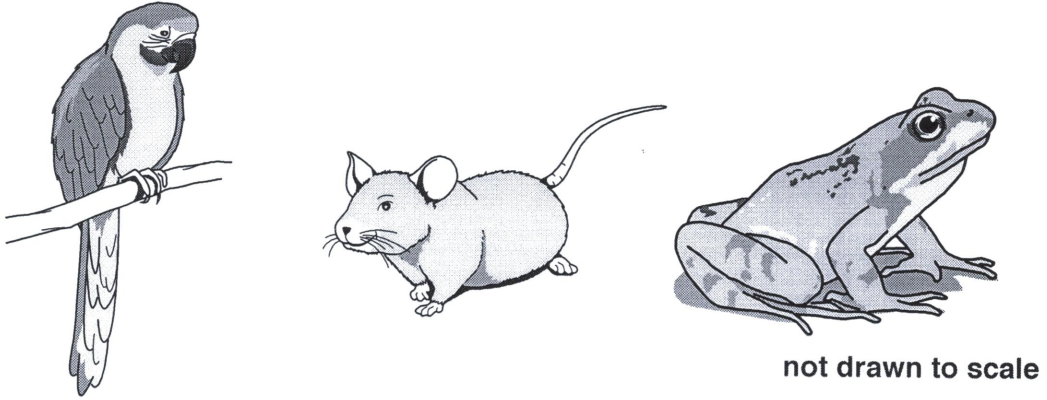

not drawn to scale

Fig. 1.1

(a) State **one** characteristic of all vertebrates.

....[1]

(b) (i) Name the **two** other classes of vertebrate **not** shown in Fig. 1.1.

1 ....

2 ....
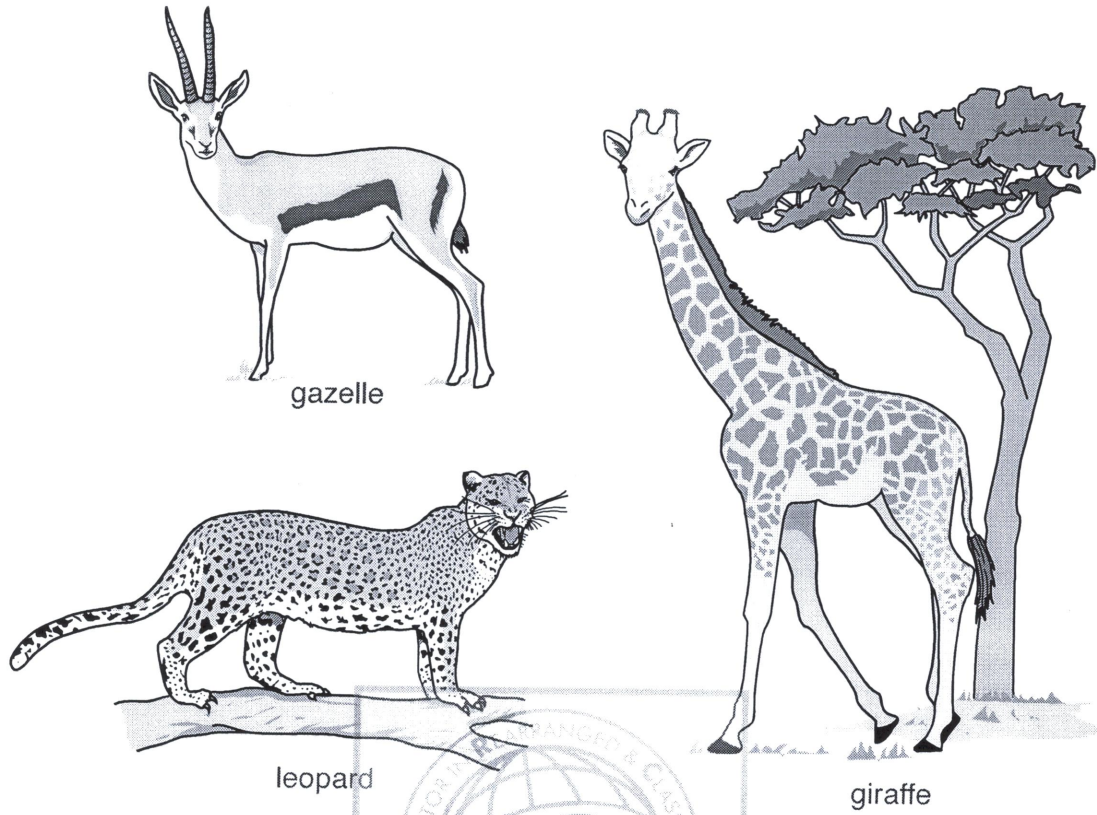[2]

(ii) Name the feature which covers the surface of the bodies of animals in these two classes but **not** the three animals shown in Fig. 1.1.

....[1]
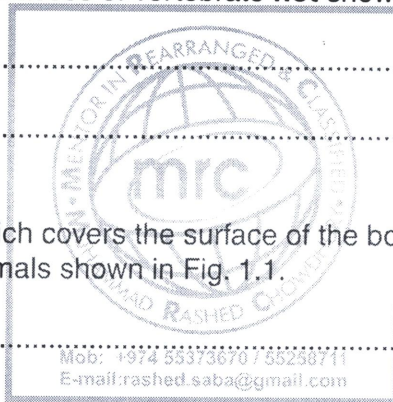
[Total: 4]

2 Fig. 2.1 shows three mammals.

gazelle

leopard

giraffe

not drawn to scale

Fig. 2.1

For each mammal, choose **one** adaptive feature **visible** in Fig. 2.1 and outline how it helps the mammal to survive in its environment.

Choose a **different** feature for each mammal.

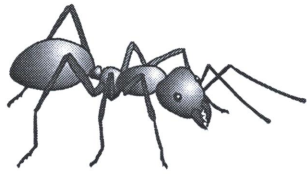Write your answers in Table 2.1.

Table 2.1

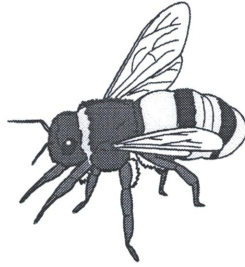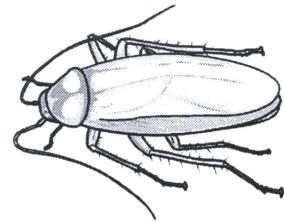| name of mammal	adaptive feature	how feature helps the mammal to survive in its environment
gazelle		
giraffe		
leopard		

[6]

[Total: 6]

1 Fig. 1.1 shows five arthropods.

ant

bee

cockroach
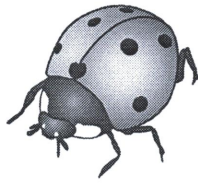
ladybird
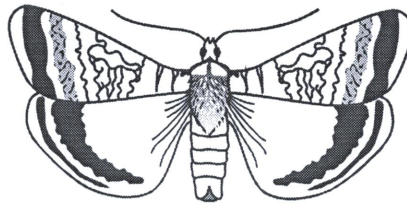
moth

not drawn to scale
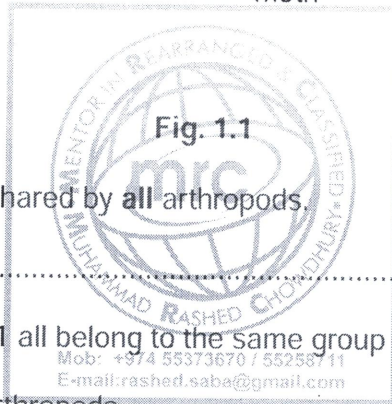
Fig. 1.1

(a) State **one** feature that is shared by **all** arthropods.

....[1]

(b) The five animals in Fig. 1.1 all belong to the same group of arthropods.

(i) Name this group of arthropods.

Choose your answer from this list.

arachnids   **crustaceans**   **insects**   **myriapods**

....[1]

(ii) State **two** visible features of the bee, shown in Fig. 1.1, which place it in this group.

1 ....

2 ....

[2]

[Total: 4]

1   Fig. 1.1 shows four different reptiles.

Fig. 1.1

not drawn to scale
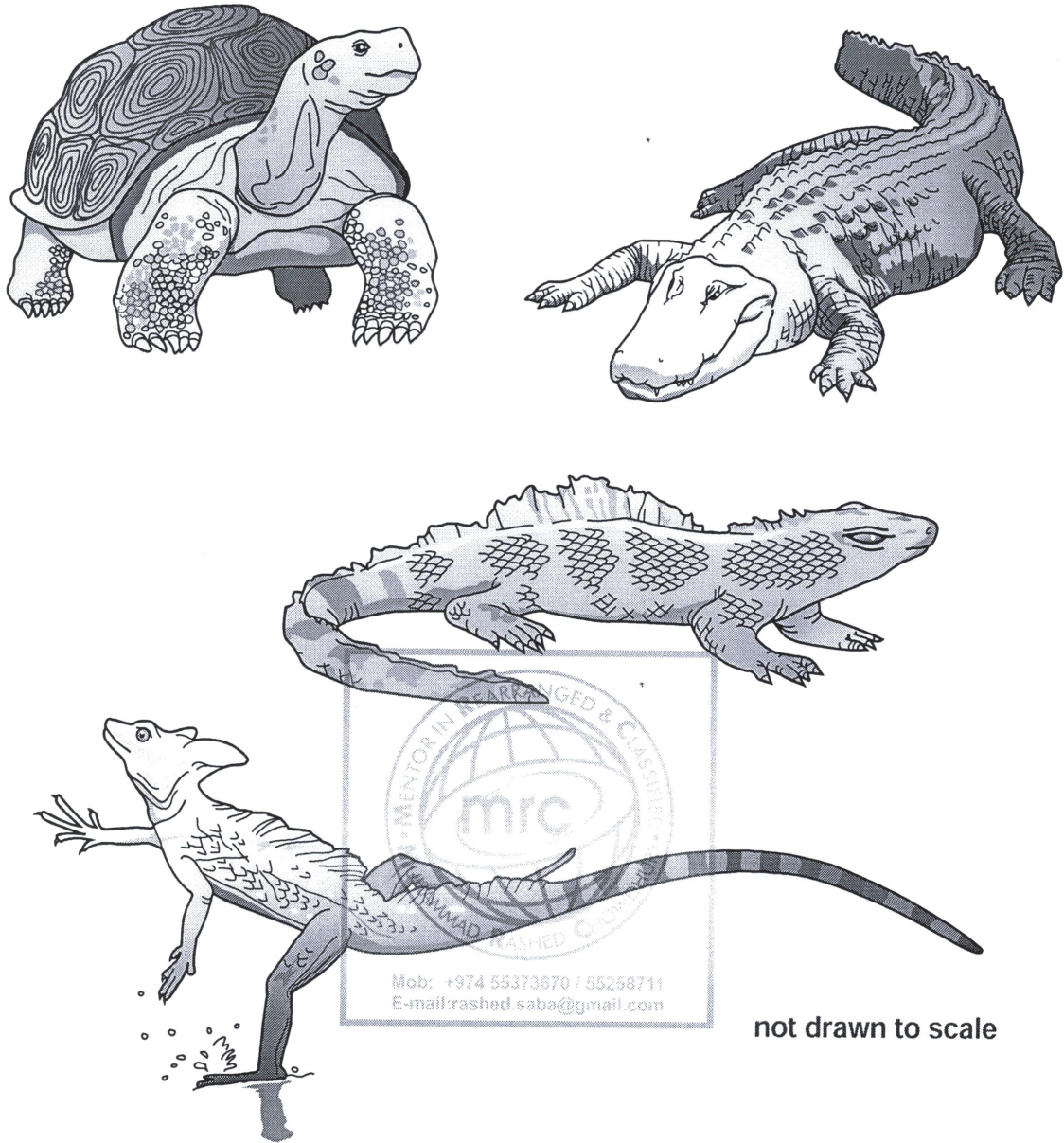
(a) (i)   Reptiles are vertebrates.

State **one** feature which all vertebrates have in common.

....

....[1]

(ii) State **two** features which can be used to identify the animals in Fig. 1.1 as reptiles.

1 ....

....

2 ....

....
[2]

(iii) Fig. 1.2 shows a snake.
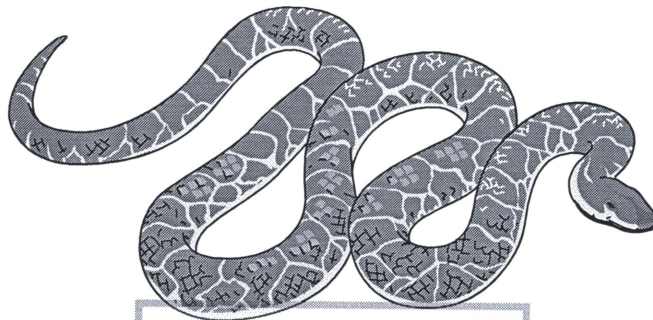
Fig. 1.2

Snakes are also reptiles. State **one** way, **visible** in Fig. 1.2, in which snakes are different from the reptiles shown in Fig. 1.1.

....

....[1]

Fig. 1.3 shows a newt, which looks similar to some reptiles, but belongs to a different vertebrate group.
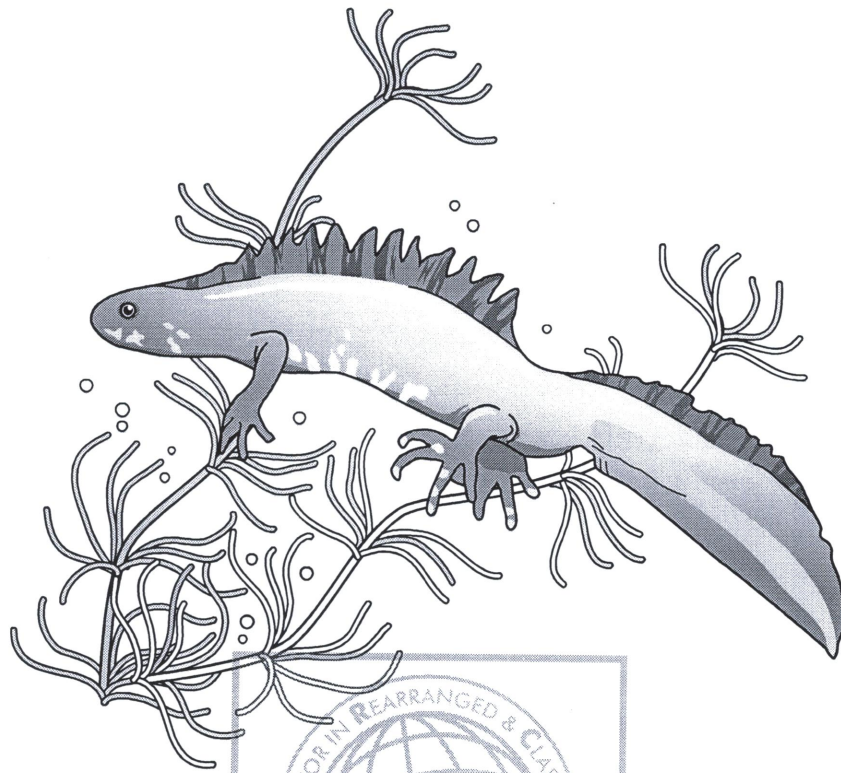
Fig. 1.3

(b) (i) State the vertebrate group to which the newt belongs.

Choose from this list and **circle** your answer.

amphibian   bird   fish   mammal

[1]

(ii) State **two** features of this group which distinguish it from other vertebrate groups.

1 ....

....

2 ....

....

[2]

(c) In some species of reptile, the female keeps the fertilised eggs in her body until they are ready to hatch. Suggest **two** advantages of having this adaptive feature.

1 ....

....

2 ....

....

[2]

[Total: 9]

2   Fig. 2.1 shows a gorilla with her baby.
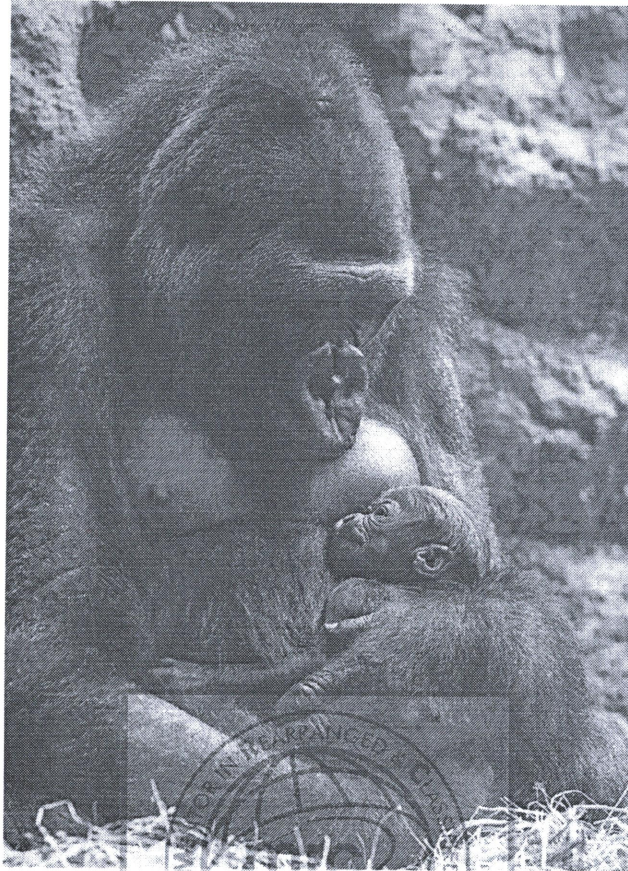
Fig. 2.1

(a) Gorillas are mammals and have characteristics that are **only** found in mammals, and not in any other vertebrate group.

State:

(i) **one** mammalian characteristic visible in Fig. 2.1

....[1]

(ii) **two** mammalian characteristics **not** visible in Fig. 2.1

1 ....

2 ....
[2]

(b) Fig. 2.2 shows the average body mass and Table 2.1 shows the average lifespan of males in six species of mammal.

Fig. 2.2

Table 2.1

species	average male lifespan / years
elephant	70
rhinoceros	48
hippopotamus	42
giraffe	25
bison	23
moose	21

(i) Name the mammal that has an average lifespan of 23 years.

....[1]
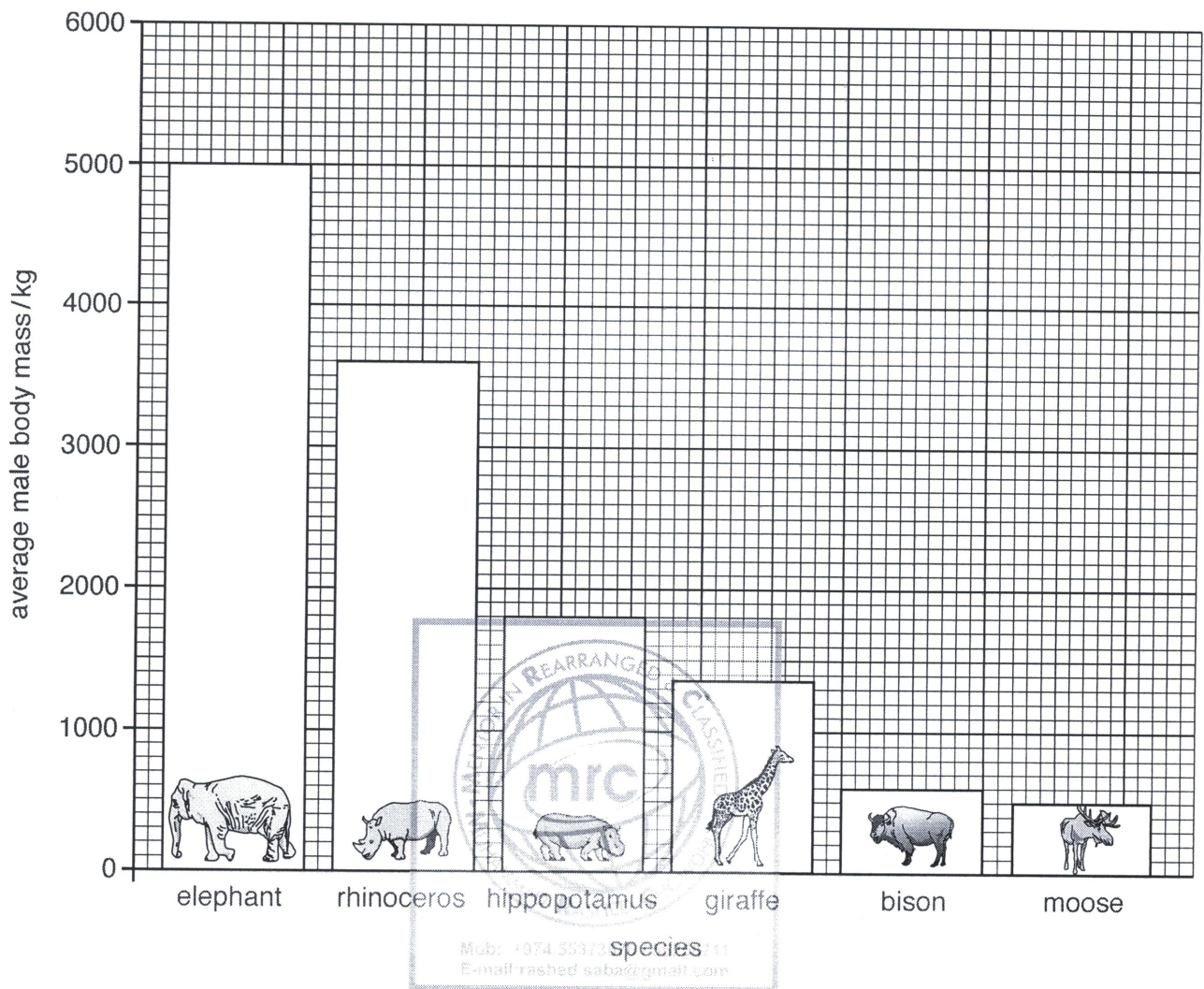
(ii) State the average body mass of a male rhinoceros.

.... kg [1]

(iii) State the average body mass of the mammal that has an average lifespan of 25 years.

.... kg [1]

(iv) Describe the relationship between average body mass and average lifespan shown in Fig. 2.2 and Table 2.1.

....

....

....[1]

(c) The average lifespan of a human male can vary from 40 years to 85 years.
The lifespan partly depends on the things available in the country where the man lives.
Suggest **three** things that would increase the chance of a man having a longer lifespan.

1 ....

....

2 ....

....

3 ....

....
[3]

[Total: 10]
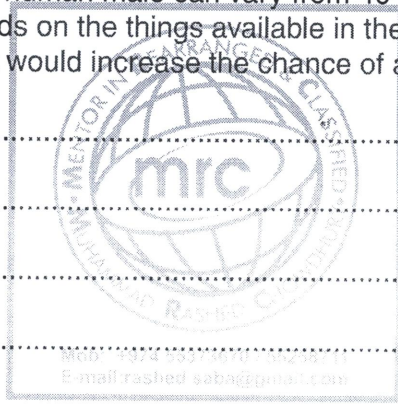
1 Fig. 1.1 shows five different vertebrates.
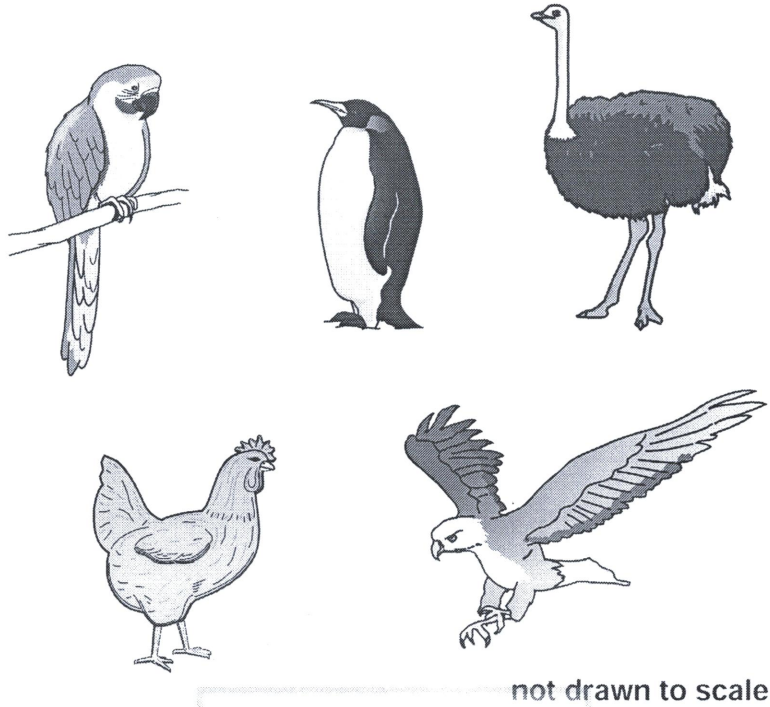
not drawn to scale

Fig. 1.1

(a) State **one** feature that is shared by all vertebrates.

....[1]

(b) The five animals in Fig. 1.1 all belong to the same group of vertebrates.

(i) State the name of this group of vertebrates.

....[1]

(ii) State **two** features which place the five vertebrates in this group.

1 ....

2 ....

[2]

[Total: 4]

1 Fig. 1.1 shows a diagram of an arthropod.
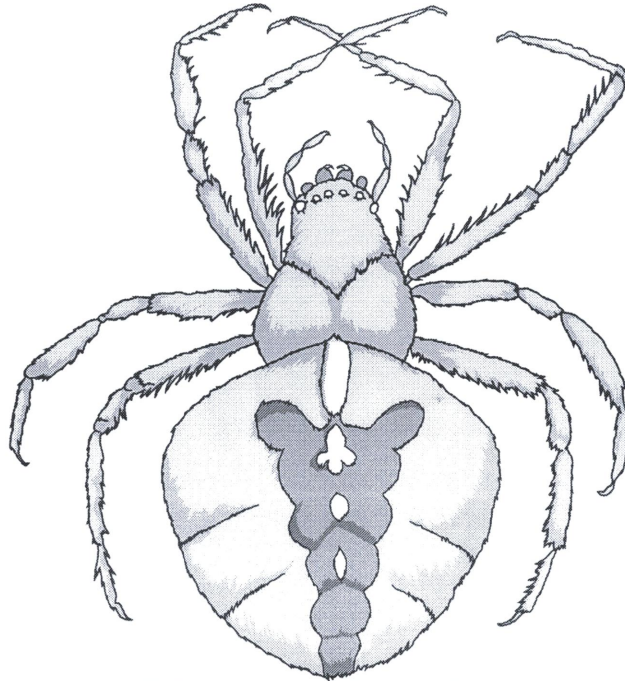
Fig. 1.1

(a) (i) Name the arthropod group this animal belongs to.

....[1]

(ii) Give **two** reasons for your answer.

1 ....

....

2 ....

....
[2]

(b) State the names of **two** other arthropod groups.

1 ....

2 ....
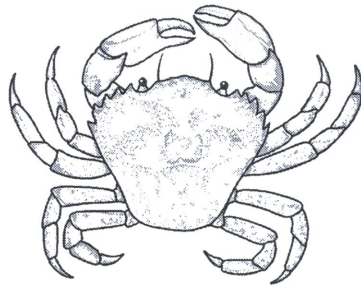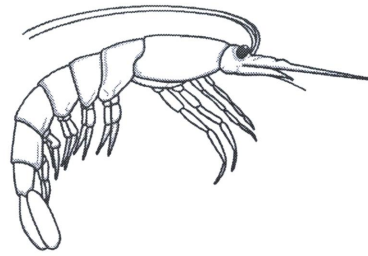[2]

[Total: 5]

1 Fig. 1.1 shows three crustaceans which live in the same rock pool.

The rock pool also contains seaweed and seawater.

Carcinus maenas   *Crangon crangon*
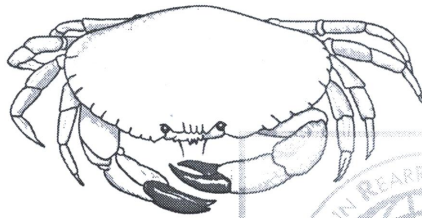
Cancer pagurus   **not drawn to scale**

Fig. 1.1
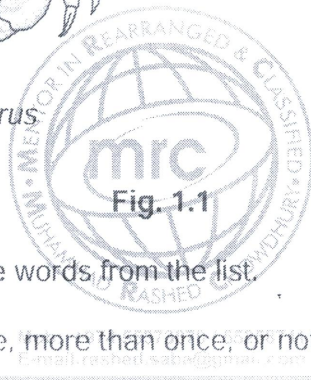
(a) Complete the sentences. Use words from the list.

Each word may be used once, more than once, or not at all.

> **arthropods**   **carnivore**   **consumer**   **endoskeleton**
>
> **exoskeleton**   **five**   **four**   **habitat**   **herbivore**
>
> **population**   **producer**   **three**   **vertebrates**

Crustaceans all belong to the same group as insects, called ....

All crustaceans have at least .... pairs of legs.

They also have a hard outer covering called an ....

Seven individuals of one species, *Cancer pagurus*, were found in the same pool. These

individuals make up a ....

Cancer pagurus is a .... because it eats fish and other animals.

Seaweed makes its own food so it is a ....

[6]

(b) The drawing of *Cancer pagurus* in Fig. 1.1 is not the same size as the actual animal.

State what would be needed to calculate its actual size **and** explain how you would do this calculation.

....

....

....

....

.... [3]

(c) All the crustaceans were found living under rocks or seaweed.

Suggest **two** reasons why they were living there.

1 ....

....

2 ....

....

[2]

(d) Two other crustaceans, *Porcellana platycheles* and *Porcellana longicornis*, were found in the same rock pool. They are closely related to each other.

(i) Describe how their scientific names show that they are closely related.

....

.... [1]

(ii) Although they are closely related, they cannot successfully interbreed.

Describe how their scientific names show that they cannot successfully interbreed.

....

....

.... [1]

[Total: 13]