1. **Table 1** shows the amount of energy in 100 g of each type of food. Use it to answer the questions that follow.

Food	Energy (kJ/100 g)
Potato	90
Peas	70
Boiled rice	120
Banana	330
Beef	200

(a) Draw a bar graph to show amount of energy against type of food.

(b) i. Which food is the best for a man with very heavy work?
ii. Explain your answer in (b)i above.

(c) Beef is not a carbohydrate, suggest why it has higher energy content than boiled rice.

2. **Figure 1** shows diagrams of some common animals of the vertebrate group. Use it to answer the questions that follow.

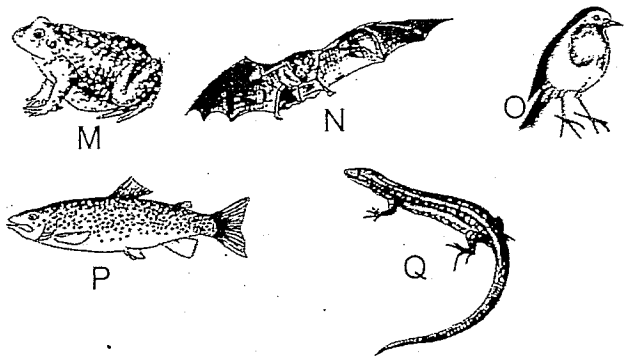

Figure 1

(a) Construct a simple dichotomous key that can be used to identify the above animals.

(b) To which groups of vertebrates do N and Q belong?

(c) State *one* way in which M and Q differ in their mode of reproduction.

(d) State *one* structural adaptation in P for its mode of locomotion.

3. You are provided with a wing feather of a bird labelled specimen A.

(a) Draw specimen A and label any three parts.

(b) i. Measure the longest axis of your drawing in millimeters and record your finding.
ii. Calculate the magnification of your drawing. Show your working.

(c) i. What is the main use of specimen A to a bird?
ii. State *two* ways in which specimen A is adapted to its function.

4. You are provided with the following materials:
- Specimen X.
- Salt solutions of the following concentration: 0%, 25% and 50%.
- razor blade/scalpel or knife .
- ruler.

i. Using a scalpel or razor blade,
- peel the specimen
- cut three small pieces that are 2 cm long, 1 cm wide and 0.5 cm thick.

ii. Place one piece in 0% salt solution, the other piece in 25% salt solution, and the third piece in 50% salt solution. Leave to stand for 10 minutes.

iii. Remove the pieces.

(1) measure the length of each piece.
(2) Try to bend each piece to test its flexibility.

(a) Record your results in the following table:

Concentration of salt solution (%)	Length of Potato piece in cm	Flexibility
0		
25		
50		

(e) From the table, state the relationship between salt concentration and length of potato pieces.

(f) Explain the results observed in flexibility of the potato pieces in 0% salt concentration and 50% salt solution.