

Variation

Question Paper 1

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Selection and evolution
Sub Topic	Variation
Booklet	Theory
Paper Type	Question Paper 1

Time Allowed : 53 minutes

Score : / 44

Percentage : /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	77.5%	70%	62.5%	57.5%	45%	<45%

1 Meiosis is a type of nuclear division, which produces gametes for sexual reproduction.

(a) Fig. 7.1 shows diagrams of the stages of meiosis, **A** to **J**, but they are not in the correct order.

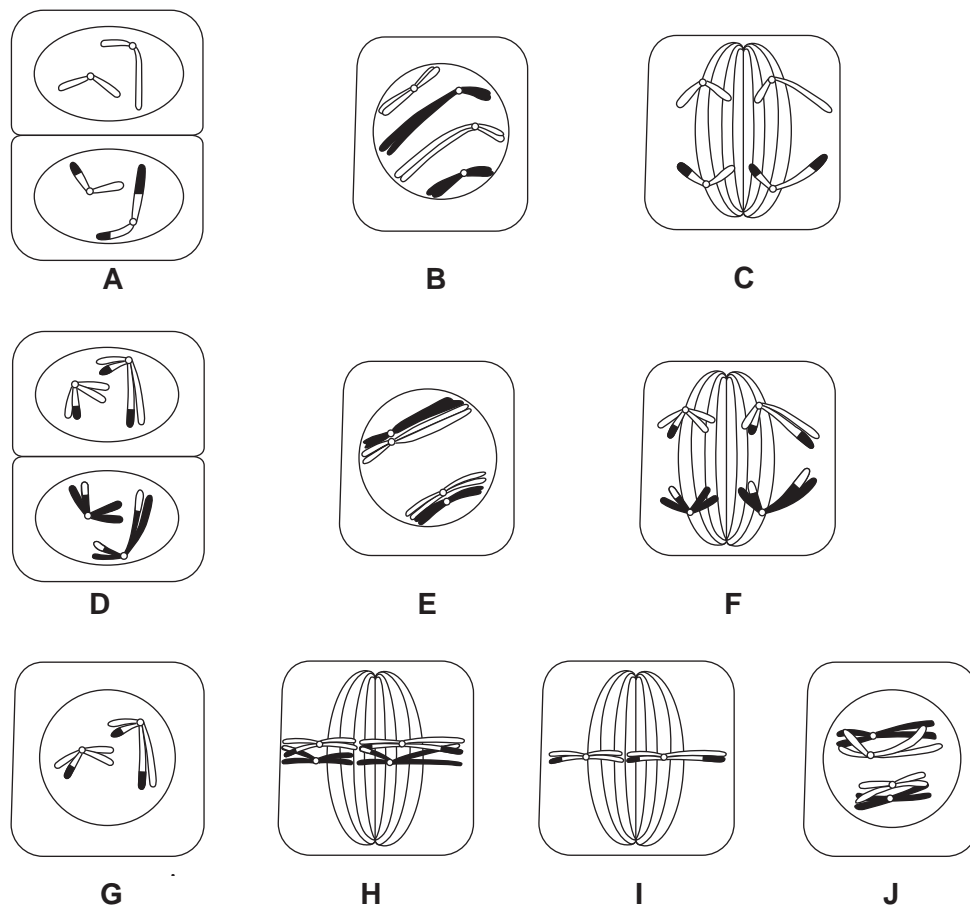


Fig. 7.1

Some of the stages have already been written in the table.

nuclear division	letter of stage
meiosis I	B
	D
meiosis II	

(b) Explain how meiosis can result in genetic variation amongst offspring.

.....[5]

[Total: 9]

- 2 Fig. 4.1 is a diagram drawn from a photomicrograph of an animal cell undergoing meiosis.

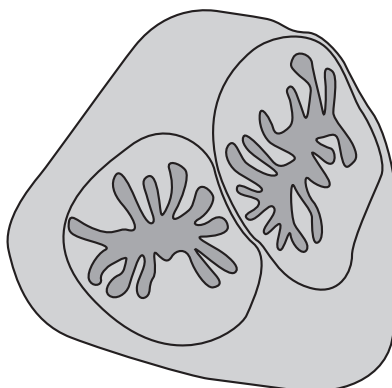


Fig. 4.1

- (a) Identify the stage of meiosis shown in Fig. 4.1.

.....[2]

- (b) Describe the main events that will occur to complete meiosis from this stage.

.....
.....
.....
.....
.....[4]

- (c) Describe **two** ways in which meiosis leads to variation.

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

- 3 The humpback whale, *Megaptera novaeangliae*, is one of the world's largest aquatic mammals. It can grow to a length of up to 15 metres and a mass of up to 36 000 kg. A large proportion of the mass of a humpback whale is a very thick layer of fat-filled cells stored under the skin, called blubber.

The humpback whales are seasonal feeders. They feed in polar regions during the summer and then migrate to warmer temperate and tropical waters to mate and have their young during the polar winter.

- (a) One reason that the humpback whale has managed to reach its enormous size is because it is a member of a simple food web. Fig. 3.1 is an example of such a food web.

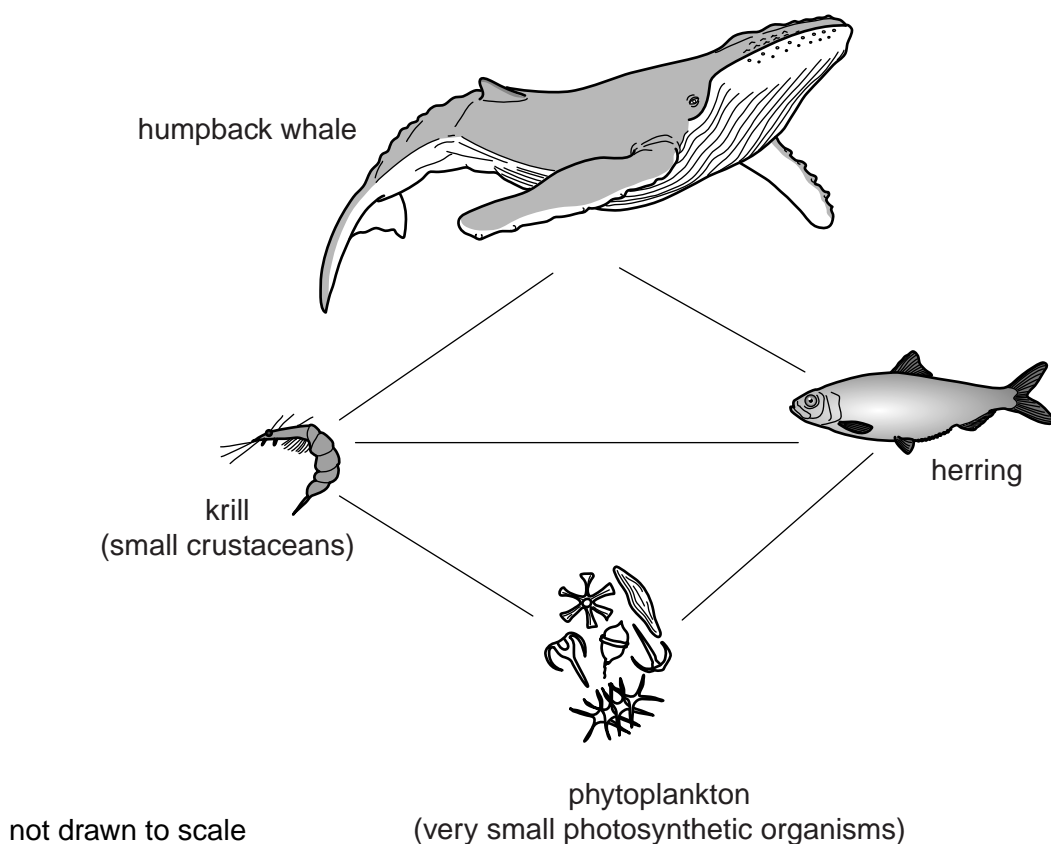


Fig. 3.1

- (i) The humpback whale is a carnivore, feeding on krill and herring. The herring feed on krill.

Add **arrow heads** to the lines drawn on Fig. 3.1 to show the direction of energy flow in the food web. [1]

- (ii) State the trophic level to which the humpback whale belongs.

..... [1]

- (iii) In terms of energy transfer, explain how the humpback whale is able to reach such a large size.

.....

.....

.....

.....

.....

..... [3]

- (b) The thickness of blubber in humpback whales decreases during the non-feeding season and increases during the feeding season.

Suggest explanations for this observation.

.....

.....

.....

.....

.....

..... [2]

- (c) Describe the roles of water as an environment for organisms, such as those shown in Fig. 3.1.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]

(b) Outline how artificial selection differs from natural selection. [6]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at www.savemyexams.co.uk/

This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Save My Exams! – The Home of Revision

For more awesome GCSE and A level resources, visit us at www.savemyexams.co.uk/

[illegible]