(b) Topics removed from the syllabus

The following table shows the topics that are removed from the syllabus.

Sections	Topics removed
The Cell	——
Organisms and Their Environment	• Man and micro-organisms • Monoculture
Energetics	——
Obtaining Essentials for Life	• Biuret test for protein (P) • Smoking and health hazards • Blood groups and blood transfusion
Coordination and Response	• Structure of ear and its auditory function • Function of ear in detecting movement • Support in mammal
Regulation and Defence	——
Reproduction and Growth	• Budding in yeast • Spore formation in *Mucor* / *Rhizopus* • Conditions for seed germination
Genetics and Evolution	——

Key: (P) Practical work

Distribution of Exam Questions

Topic \ Year	1993	1994	1995	1996	1997	1998	1999
Sensitivity, Nervous and Hormonal Coordination in Humans	3ai	1cii	3(bi-iii)	1(ci-iv)	—	4(ai-iv)	4(aii, iii)
Locomotion in Humans and Growth Movements in Flowering Plants	3(aii-iv)	—	—	—	4(cii-iii)	2c	3b
Homeostasis and Body Defence	2(aiii, b)	2a	2b, 4b	2bii, 3b, 4c	3a	1ciii, 2b	2biii, 2c
Cell Division, Asexual Reproduction, Growth and Development	—	3(ci-iv)	—	—	2(bi-ii)	3(bi, ii, iv)	1(ai-iv)
Sexual Reproduction	3(ci-iv)	4(bi-iv)	1c	2biii	—	3biii	3(ci-iii)
Genetics and Evolution	1(bi-iii)	4(ai-iv)	1b	3a	1c	1c	—

Topic \ Year	2000	2001	2002	2003	2004	2005
Sensitivity, Nervous and Hormonal Coordination in Humans	2b	2(ai-iv)	4(ai, iii-v)	3a	2c	—
Locomotion in Humans and Growth Movements in Flowering Plants	—	—	1b	—	—	—
Homeostasis and Body Body Defence	3b, 4(ci-iii)	1b, 4a	1(ci-iii)	2ciii, 4c	1(ciii-iv), 3b	7, 9a
Cell Division, Asexual Reproduction, Growth and Development	2ci	1a, 4(ci-iii)	2aiv	—	—	—
Sexual Reproduction	1(aiv-v)	—	2(ai-iii)	2bii	2a	10(ai, ii)
Genetics and Evolution	2ciii	3(ai-iii)	3(bv, ci-iii)	2a	3(ai-ii)	2, 9aiii, 10(aiii-iv, b)

13 Sexual Reproduction

Review

13.1 Sexual reproduction in flowering plants

Extension

Basic steps in sexual reproduction

- Normally, two parents are involved.

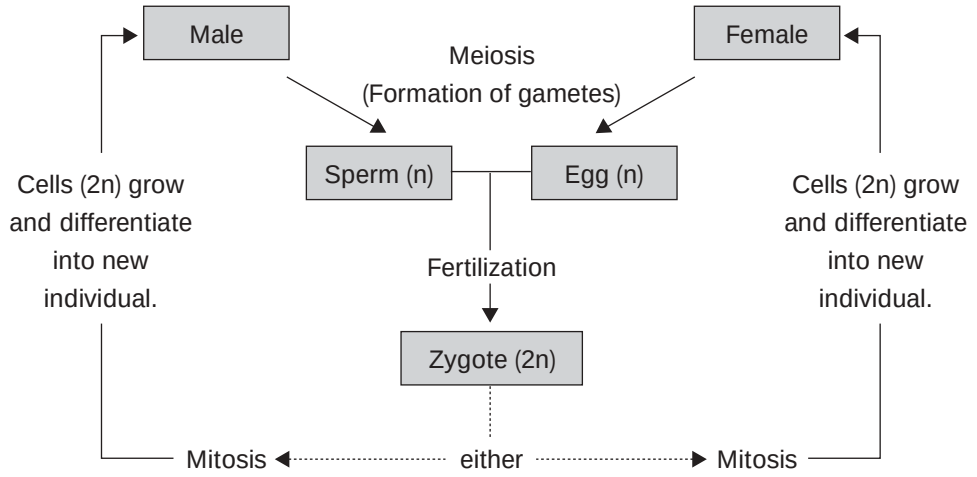

Figure 13.1

- Sexual reproduction involves the fusion of haploid nuclei that are often contained in special sex cells called gametes.
- These gametes are produced by meiosis and they show genetic variety.
- The fusion of gametes produces offspring.

Demonstration

Section A

1. In humans, the presence or absence of ear lobe is determined by a pair of alleles. The allele for the presence of ear lobe (E) is dominant to the allele for the absence of ear lobe (e).

Figure 14.9

(a) Name a chemical substance in the nucleus where the allele E and e are located. (1 mark)

(b) Distinguish between 'gene' and 'allele'. (2 marks)

(c) State the possible genotype(s) of
(i) a person with ear lobe. (1 mark)
(ii) a person without ear lobe. (1 mark)

(d) A student was asked to choose a person who is homozygous for the ear lobe character from her class. Suggest and explain what she would do. (3 marks)

Total: 8 marks

Guidelines
Pay attention to the key word 'chemical substance' in the question.

Guidelines
Organism showing the dominant character can either be homozygous or heterozygous.

Guidelines
Do not accept 'chromosome' as answer since it is a 'structure' rather than a 'chemical substance'.

Guidelines
You should use the symbols given in the question to write the genotypes.

Suggested Answer

(a) Deoxyribonucleic acid / DNA 1
(b) A gene codes for a hereditary character / protein 1
while an allele is an alternative form of the same gene. 1
(c) (i) EE, Ee $\frac{1}{2} + \frac{1}{2}$
(ii) ee 1
(d) Choose a classmate without ear lobe 1
because the allele for the absence of ear lobe is recessive 1
and an organism showing the recessive character must be homozygous. 1

Practice

Section A

1. The diagram below shows the lateral view of the left half of the skeleton of a mammal:

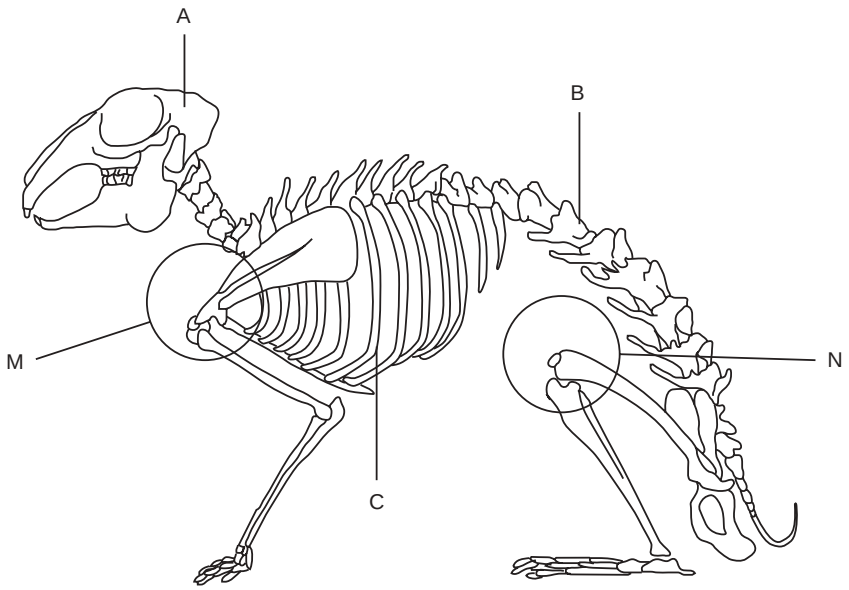

Figure 10.21

(a) What type of diet, carnivorous or herbivorous, would you expect this mammal to have? Explain your answer. (3 marks)

(b) What type of movable joints are found in M and N? (2 marks)

(c) State *two* functions of structure B. (2 marks)

(d) (i) Which labelled part contains immovable joints? (1 mark)

(ii) Explain the importance of the immovable joints to the function of this part. (3 marks)

Total: 11 marks

CE
BIO
PAPER 1

BIOLOGY PAPER 1

Question-Answer Book

(Mock Examination 1)

$1\frac{3}{4}$ hours

This paper must be answered in English

1. This paper consists of TWO sections, A and B. Section A carries 58 marks, of which 4 marks are awarded for effective communication. Section B carries 38 marks, of which 2 marks are awarded for effective communication.

2. Attempt ALL questions in Section A, and any TWO questions in Section B. Write your answers in the spaces provided in this Question-Answer Book.

3. The diagrams in this paper are not necessarily drawn to scale.

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Question Commands

The following table lists the question command(s) which showing the requirements of answering questions:

<table>
<tr><th>Question commands</th><th>Examples</th></tr>
<tr><td>Account for * ...
(Give reasons for, but do NOT calculate)</td><td>The table below shows the change in total dry mass in seeds before and after germination:
<table><tr><td></td><td>Seeds</td><td>Seedlings formed after germination</td></tr><tr><td>Total dry mass</td><td>39.2</td><td>28.4</td></tr></table>
Account for the difference in total dry mass between the seeds and the seedlings after germination.
Correct answer: Some stored food in the seeds is used in respiration.
Wrong answer: 39.2 g – 28.4 g = 10.8 g</td></tr>
<tr><td>Arrange in ascending order ...
(The lowest first and the highest last)
Arrange in descending order ...
(The highest first and the lowest last)</td><td>Arrange the complexity of the following terms in ascending order :
Tissue, cell, system, organ
Correct answer: Cell, tissue, organ, system
Wrong answer: System, organ, tissue, cell
(Remarks: No mark will be awarded for descending order.)</td></tr>
<tr><td>Calculate ...
(Show all the steps of calculation and give the answer with appropriate unit)</td><td>A boy breathes three times per ten seconds, calculate the rate of breathing of the boy.
Correct answer: Breathing rate of the boy
$= \frac{3}{10} \times 60$
= 18 breaths / min
Wrong answer: Breathing rate = 18</td></tr>
<tr><td>Compare ...
(Point out the similarities and / or differences between two or more subjects)</td><td>Compare the chromosome number of the sperm with that of the fertilized egg.
Answer: The chromosome number of the sperm is haploid (n) while that of the fertilized egg is diploid (2n).</td></tr>
<tr><td>Define / What is meant by ...
(State briefly the meaning of the term)</td><td>Define ‘dry weight’ of germinating seedlings.
Answer: The weight of germinating seedlings after removing all of the water from them.</td></tr>
</table>