# 2019 HKDSE Biology

# Exam Analysis

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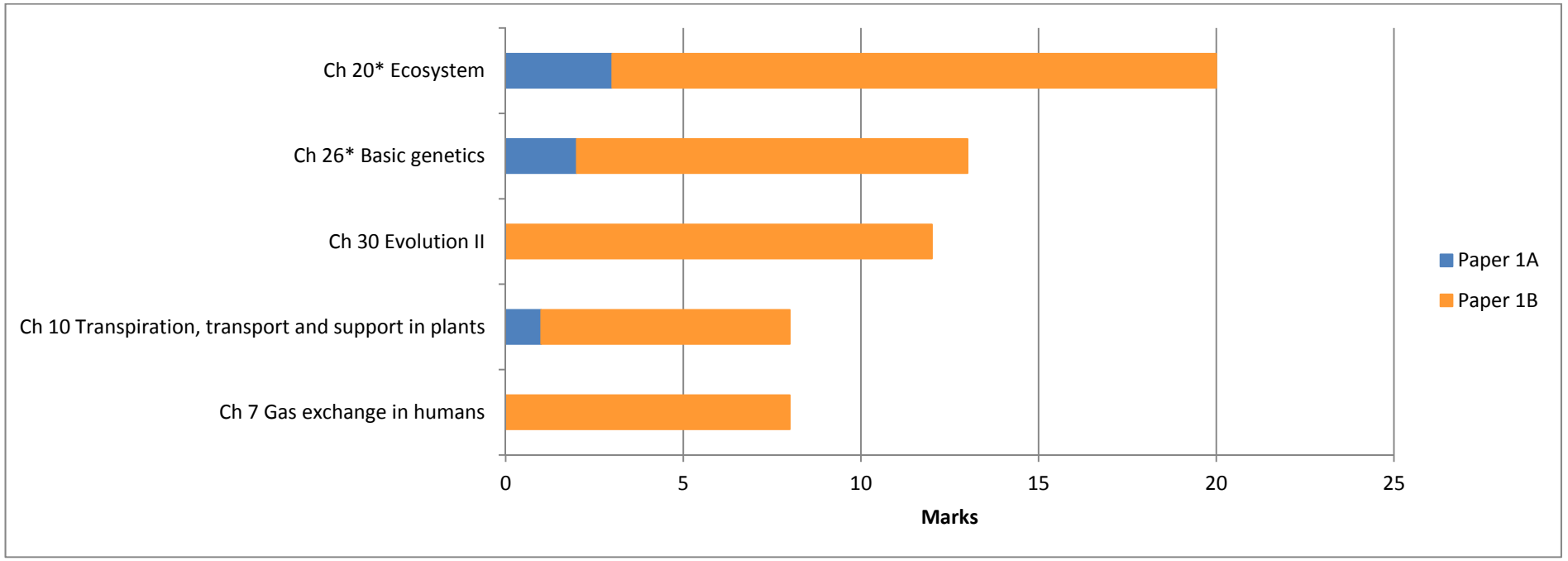
## 1 Coverage

Most topics in the curriculum are covered. More marks are allocated to the chapters below:




[* Also hot topics in 2018 HKDSE papers]

## 2 Level of difficulty

**a** The multiple-choice questions in 2019 and 2018 HKDSE papers are of similar level of difficulty. In Paper 1A, Q7, 10, 11, 28 and 30 are more challenging and may be set to differentiate students of different abilities.

**b** The conventional questions in 2019 and 2018 HKDSE papers are of similar level of difficulty. In Paper 1B, Q7b, 8 and 11 are more challenging and may be set to differentiate students of different abilities.

**c** In Paper 2, Q1b(iii), 2a(ii), 2b(ii), 3b(iii)(2) and 4a(iii) are comparatively more difficult.

## 3 Skills or abilities assessed

A number of questions this year are set on scenarios in daily life. The papers also assess different types of skills and abilities. They are shown in the table below.

| | | Paper 1A | Paper 1B |
|---|---|---|---|
| **a** | **Skills related to SBA** | | |
| | **i** Making observations | Q5, 19, 20 and 32 | Q2 and 4a |
| | **ii** Designing experiments | | |
| | • Identifying variables | Q7 and 30 | - |
| | • Ensuring reliability of results and validity of conclusions | Q9 and 10 | Q6c |
| | **iii** Result prediction | Q6, 11 and 25 | Q6b |
| | **iv** Interpreting data or graphs | Q4, 10, 11, 26 and 31 | Q6a, 7b, 9a and 10a |
| | **v** Interpreting photomicrographs or electron micrographs | Q1 and 27 | Q3b, 3c, 5a, 6d and 7a |
| | **vi** Drawing conclusions | Q28 | Q8a(i) and 8b |
| **b** | **Understanding of the nature of science (NOS)** | - | Q8a |
| **c** | **Applying knowledge in unfamiliar situations** | Q5, 16, 17, 20, 21 and 35 | Q4, 7, 5b, 8c and 9 |
| **d** | **Communication** | - | Q5, 8c, 9a, 10c and 11 |

## 4 Challenging questions

Some questions in the papers are challenging. The table below lists the difficulties students may encounter when answering these questions. Suggestions for developing the necessary skills and abilities to address similar questions are also listed below.

| Question | Difficulty | Suggestion |
|---|---|---|
| Paper 1A Q10<br>- An investigation of the effect of temperature on catalase activity | Students often have difficulty in interpreting graphs. | Students should look for the time period when there is a largest change in volume of gas. Students should expose to more experiments to develop skills for answering this type of questions. |
| Paper 1A Q28<br>- An investigation of the transport of auxins in young seedlings | Students often have difficulty in drawing conclusions from experimental results. | Students should know the difference between a correct statement and a valid conclusion. Student should practice more to develop skills for answering this type of questions. |
| Paper 1B Q8<br>- Development of knowledge about ultrasound navigation of bats | Students often find answering questions set on NOS difficult. They may have difficulty in explaining how the historical events can demonstrate certain aspects of NOS. | Students should understand NOS through reviewing the history of biology and discussing biological concepts. |

| Question | Difficulty | Suggestion |
|---|---|---|
| Paper 1B Q11<br>- Vulnerability of pure-bred pets to genetic diseases | Students may have difficulty in applying biological concepts they have learnt to daily life. | Students should write clearly the relationship between breeding process, genetic variations and genetic disease. |
| Paper 2 Q2a(ii)(1)<br>- The difference in chemical composition of effluent from sewage treatment plant and artificial wetland | Students are unfamiliar with the principle of artificial wetland. They are generally weak in applying concepts to unfamiliar situations. They may not be able to integrate the data from the question with biological concepts they have learnt. | Students have to integrate information from the question with the biological concepts learnt. More practice on higher-order thinking may help develop skills for answering this type of questions. |
| Paper 2 Q4a(iii)<br>- The suitability of using semen and blood for DNA fingerprinting | Students may have difficulty in applying what they have learnt to judge whether semen and blood are suitable samples for DNA fingerprinting. | Students have to integrate biological concepts learnt from different topics to make reasonable judgment. More practice on critical thinking may help develop skills for answering this type of questions. |

## 5 Exam trend

### Compulsory part

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| **Ch 1** Introducing biology | | | | | | | MC BIO IA Q2 | |
| **Ch 2** The cell as the basic unit of life | | MC BIO IA Q3 | MC BIO IA Q3<br>MC BIO IA Q5 | MC BIO IA Q1 | MC BIO IA Q12 | BIO IB Q4 | | |
| **Ch 3** Movement of substances across cell membrane | | MC BIO IA Q5<br>MC BIO IA Q23<br>MC BIO IA Q24<br>MC BIO IA Q25 | BIO IB Q7 | MC BIO IA Q2<br>BIO IB Q6 | MC BIO IA Q1<br>MC BIO IA Q24<br>MC BIO IA Q25 | BIO IB Q2 | MC BIO IA Q1<br>MC BIO IA Q36<br>BIO IB Q2 | MC BIO IA Q8<br>MC BIO IA Q11<br>BIO IB Q6 |
| **Ch 4** Enzymes and metabolism | | MC BIO IA Q6<br>MC BIO IA Q7 | MC BIO IA Q9 | MC BIO IA Q3<br>BIO IB Q7 | MC BIO IA Q8<br>MC BIO IA Q27 | MC BIO IA Q4<br>MC BIO IA Q5 | MC BIO IA Q3<br>MC BIO IA Q4<br>MC BIO IA Q27 | MC BIO IA Q9<br>MC BIO IA Q10<br>BIO IB Q2 |
| **Ch 5** Food and humans | | | | | MC BIO IA Q3<br>MC BIO IA Q5<br>MC BIO IA Q6 | MC BIO IA Q3 | | MC BIO IA Q26 |
| **Ch 6** Nutrition in humans | MC BIO IA Q1<br>MC BIO IA Q20<br>MC BIO IA Q34<br>BIO IB Q10 | MC BIO IA Q26<br>BIO IB Q3 | MC BIO IA Q1<br>MC BIO IA Q24<br>MC BIO IA Q25<br>MC BIO IA Q26<br>BIO IB Q11 | MC BIO IA Q7<br>MC BIO IA Q8<br>MC BIO IA Q9<br>MC BIO IA Q10 | MC BIO IA Q2<br>MC BIO IA Q7 | MC BIO IA Q1<br>MC BIO IA Q2 | MC BIO IA Q18<br>MC BIO IA Q23<br>MC BIO IA Q25<br>BIO IB Q8 | MC BIO IA Q23<br>MC BIO IA Q24<br>MC BIO IA Q25 |

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| **Ch 7** Gas exchange in humans | MC BIO IA Q22 | MC BIO IA Q1<br>MC BIO IA Q30 | MC BIO IA Q27<br>BIO IB Q2 | MC BIO IA Q13<br>MC BIO IA Q15 | BIO IB Q11 | BIO IB Q5 | MC BIO IA Q8 | BIO IB Q5 |
| **Ch 8** Transport in humans | MC BIO IA Q21<br>MC BIO IA Q31<br>MC BIO IA Q32<br>MC BIO IA Q33<br>BIO IB Q1 | MC BIO IA Q31 | | MC BIO IA Q14<br>BIO IB Q11 | MC BIO IA Q13<br>MC BIO IA Q16<br>MC BIO IA Q17<br>MC BIO IA Q28<br>MC BIO IA Q29 | MC BIO IA Q18<br>BIO IB Q11 | MC BIO IA Q34<br>MC BIO IA Q35 | MC BIO IA Q15<br>MC BIO IA Q22 |
| **Ch 9** Nutrition and gas exchange in plants | BIO IB Q5 | | MC BIO IA Q6<br>MC BIO IA Q7<br>MC BIO IA Q8 | | BIO IB Q9 | | BIO IB Q3 | |
| **Ch 10** Transpiration, transport and support in plants | MC BIO IA Q3<br>MC BIO IA Q10<br>MC BIO IA Q11<br>MC BIO IA Q12<br>BIO IB Q3 | BIO IB Q6 | MC BIO IA Q20<br>MC BIO IA Q21<br>MC BIO IA Q22<br>MC BIO IA Q23<br>BIO IB Q4 | MC BIO IA Q17<br>MC BIO IA Q18<br>BIO IB Q9 | MC BIO IA Q11<br>MC BIO IA Q21<br>MC BIO IA Q22<br>MC BIO IA Q23 | MC BIO IA Q13<br>MC BIO IA Q14<br>MC BIO IA Q15<br>MC BIO IA Q16<br>MC BIO IA Q17 | MC BIO IA Q24<br>MC BIO IA Q30<br>MC BIO IA Q31<br>CS B Q3 | MC BIO IA Q32<br>BIO IB Q10 |
| **Ch 11** Cell cycle and division | BIO IB Q11 | MC BIO IA Q14<br>MC BIO IA Q18 | BIO IB Q3 | BIO IB Q2 | MC BIO IA Q18<br>MC BIO IA Q19<br>MC BIO IA Q20 | MC BIO IA Q22 | | BIO IB Q3 |
| ✂ **Ch 12** Reproduction in flowering plants | MC BIO IA Q24 | | MC BIO IA Q4<br>BIO IB Q8 | MC BIO IA Q19<br>MC BIO IA Q24<br>MC BIO IA Q25 | MC BIO IA Q31<br>MC BIO IA Q32 | BIO IB Q3 | MC BIO IA Q15<br>MC BIO IA Q16<br>MC BIO IA Q17 | |

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| **Ch 13** Reproduction in humans | MC BIO IA Q25<br>MC BIO IA Q26<br>MC BIO IA Q27<br>MC BIO IA Q28<br>MC BIO IA Q29 | MC BIO IA Q35<br>MC BIO IA Q36 | MC BIO IA Q28<br>MC BIO IA Q29 | MC CS A Q22 | BIO IB Q2 | MC BIO IA Q19<br>MC BIO IA Q20<br>MC BIO IA Q23 | | MC BIO IA Q12<br>MC BIO IA Q27 |
| ✂ **Ch 14** Growth and development | | | | MC BIO IA Q28 | | MC BIO IA Q21<br>MC BIO IA Q24 | | MC BIO IA Q30<br>MC BIO IA Q31 |
| **Ch 15** Detecting the environment | MC BIO IA Q8<br>MC BIO IA Q9<br>MC BIO IA Q30 | MC BIO IA Q27<br>MC BIO IA Q28<br>MC BIO IA Q29<br>BIO IB Q7 | MC BIO IA Q36 | MC BIO IA Q27<br>MC BIO IA Q29<br>BIO IB Q1 | MC BIO IA Q35<br>MC BIO IA Q36 | MC BIO IA Q25<br>MC BIO IA Q26<br>MC BIO IA Q27<br>MC BIO IA Q28<br>MC BIO IA Q31 | MC BIO IA Q7 | MC BIO IA Q16<br>MC BIO IA Q17<br>MC BIO IA Q28 |
| **Ch 16** Coordination in humans | MC BIO IA Q4<br>MC BIO IA Q6 | BIO IB Q1 | MC BIO IA Q2<br>BIO IB Q10 | MC BIO IA Q22<br>MC BIO IA Q23 | BIO IB Q1 | MC BIO IA Q29<br>MC BIO IA Q30 | MC BIO IA Q20<br>MC BIO IA Q21<br>MC BIO IA Q22<br>BIO IB Q1 | MC BIO IA Q18<br>MC BIO IA Q21 |
| ✂ **Ch 17** Movement in humans | MC BIO IA Q5<br>MC BIO IA Q7 | BIO IB Q2 | MC BIO IA Q34<br>MC BIO IA Q35 | MC BIO IA Q20<br>MC BIO IA Q21<br>BIO IB Q5 | MC BIO IA Q33 | BIO IB Q1 | MC BIO IA Q19 | MC BIO IA Q19<br>MC BIO IA Q20<br>BIO IB Q4 |
| **Ch 18** Homeostasis | | MC BIO IA Q2<br>MC BIO IA Q33<br>MC BIO IA Q34 | | | | | BIO IB Q7 | |

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| **Ch 19** Biodiversity | BIO IB Q4 | MC BIO IA Q21 | MC BIO IA Q15 | MC BIO IA Q5 | MC BIO IA Q15<br>BIO IB Q4 | BIO IB Q6 | MC BIO IA Q9 | |
| **Ch 20** Ecosystems | MC BIO IA Q13<br>MC BIO IA Q14<br>MC BIO IA Q16<br>MC BIO IA Q17<br>BIO IB Q6 | BIO IB Q5<br>BIO IB Q8 | MC BIO IA Q30<br>MC BIO IA Q31<br>MC BIO IA Q33<br>BIO IB Q5 | MC BIO IA Q30<br>MC BIO IA Q31<br>BIO IB Q3 | MC BIO IA Q30<br>MC BIO IA Q34<br>BIO IB Q5 | MC BIO IA Q12<br>MC BIO IA Q32<br>MC BIO IA Q33<br>MC BIO IA Q34<br>MC BIO IA Q35<br>BIO IB Q8 | MC BIO IA Q5<br>MC BIO IA Q6<br>MC BIO IA Q14<br>MC BIO IA Q29<br>MC BIO IA Q32<br>MC BIO IA Q33<br>BIO IB Q11 | MC BIO IA Q29<br>MC BIO IA Q33<br>MC BIO IA Q34<br>BIO IB Q7<br>BIO IB Q9 |
| ✂ **Ch 21** Photosynthesis | MC BIO IA Q2<br>MC BIO IA Q23 | MC BIO IA Q8<br>MC BIO IA Q9 (deleted) | | MC BIO IA Q4<br>MC BIO IA Q11<br>MC BIO IA Q12 | MC BIO IA Q9<br>MC BIO IA Q10<br>BIO IB Q3 | MC BIO IA Q6<br>BIO IB Q7 | | MC BIO IA Q1<br>MC BIO IA Q2<br>MC BIO IA Q4<br>MC BIO IA Q5<br>MC BIO IA Q6<br>MC BIO IA Q7 |
| ✂ **Ch 22** Respiration | BIO IB Q9 | MC BIO IA Q10 | MC BIO IA Q14<br>BIO IB Q1 | MC BIO IA Q6 | MC BIO IA Q26 | MC BIO IA Q7 | MC BIO IA Q11<br>MC BIO IA Q26<br>BIO IB Q9 | MC BIO IA Q3 |
| **Ch 23** Infectious diseases | BIO IB Q2 | | | MC BIO IA Q33 | | | BIO IB Q4 | |
| ✂ **Ch 24** Non-infectious diseases and disease prevention | BIO IB Q7 | | BIO IB Q9 | MC BIO IA Q34<br>MC BIO IA Q35<br>BIO IB Q8 | BIO IB Q6 | MC BIO IA Q36 | | MC BIO IA Q35 |

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| ✂ **Ch 25** Body defence mechanisms | MC BIO IA Q35<br>MC BIO IA Q36 | MC BIO IA Q32<br>BIO IB Q9 | MC BIO IA Q32 | MC BIO IA Q32<br>MC BIO IA Q36 | BIO IB Q7 | BIO IB Q9 | MC BIO IA Q10 | MC BIO IA Q36<br>BIO IB Q1 |
| **Ch 26** Basic genetics | MC BIO IA Q15<br>BIO IB Q8 | MC BIO IA Q4<br>MC BIO IA Q12<br>MC BIO IA Q13<br>MC BIO IA Q15<br>MC BIO IA Q16<br>MC BIO IA Q17<br>BIO IB Q4<br>BIO IB Q10 | MC BIO IA Q10<br>MC BIO IA Q11<br>MC BIO IA Q12<br>MC BIO IA Q13 | MC BIO IA Q16<br>MC BIO IA Q26<br>BIO IB Q4 | MC BIO IA Q4<br>BIO IB Q8<br>BIO IB Q10 | MC BIO IA Q8<br>BIO IB Q10 | MC BIO IA Q12<br>MC BIO IA Q13<br>MC BIO IA Q28<br>BIO IB Q5<br>BIO IB Q6 | MC BIO IA Q13<br>MC BIO IA Q14<br>BIO IB Q11 |
| ✂ **Ch 27** Molecular genetics | MC BIO IA Q18<br>MC BIO IA Q19 | MC BIO IA Q11 | MC BIO IA Q16 | | | MC BIO IA Q9 | | |
| **Ch 28** Biotechnology | | | MC BIO IA Q19 | | | | | |
| **Ch 29** Evolution I | | MC BIO IA Q19<br>MC BIO IA Q20 | MC BIO IA Q17<br>MC BIO IA Q18 | BIO IB Q10 | MC BIO IA Q14 | | | |
| ✂ **Ch 30** Evolution II | | MC BIO IA Q22 | BIO IB Q6 | | | MC BIO IA Q10<br>MC BIO IA Q11 | BIO IB Q10 | BIO IB Q8 |

## Elective part

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| ✂ **E1 Human Physiology: Regulation and Control** | | | | | | | | |
| **Ch 1** Regulation of water content | BIO II Q1a, b(i) | | BIO II Q1a | | BIO II Q1b | BIO II Q1b | BIO II Q1a | |
| **Ch 2** Regulation of body temperature | BIO II Q1b(ii) | | | BIO II Q1b(iii) | | BIO II Q1a(iii) | BIO II Q1b | |
| **Ch 3** Regulation of gas content in blood | BIO II Q1b(iii) | BIO II Q1a | BIO II Q1b | BIO II Q1b(i), (ii) | BIO II Q1a | BIO II Q1a(i), (ii) | | BIO II Q1b |
| **Ch 4** Hormonal control of reproductive cycle | | BIO II Q1b | | BIO II Q1a | | | | BIO II Q1a |
| ✂ **E2 Applied Ecology** | | | | | | | | |
| **Ch 1** Human impact on the environment | BIO II Q2a | BIO II Q2a, b | BIO II Q2a, b(ii) | BIO II Q2a, b | BIO II Q2a, b | BIO II Q2a(i), b | BIO II Q2a(i), (ii), b | |
| **Ch 2** Human responsibilities for the environment | BIO II Q2b | | BIO II Q2b(i), (iii) | | | BIO II Q2a(ii)-(iv) | BIO II Q2a(iii) | BIO II Q2a, b |

| Chapter | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| ✂ **E3 Microorganisms and Humans** | | | | | | | | |
| **Ch 1** Basic microbiology | BIO II Q3a(i)-(iv), b | BIO II Q3b(i) | BIO II Q3a | BIO II Q3a, b | BIO II Q3a(iii) | BIO II Q3b(iii) | BIO II Q3a | BIO II Q3a(i), (ii)<br>BIO II Q 3b |
| **Ch 2** Use of microorganisms | | BIO II Q3a, b(ii) | BIO II Q3b(i), (ii)(2) | | BIO II Q3b | BIO II Q3a | | |
| **Ch 3** Harmful effects of microorganisms | BIO II Q3a(v) | BIO II Q3b(iii) | BIO II Q3b(ii)(1) | | BIO II Q3a(i), (ii), (iv) | BIO II Q3b(i), (ii) | BIO II Q3b | BIO II Q3a(iii) |
| ✂ **E4 Biotechnology** | | | | | | | | |
| **Ch 1** Techniques in modern biotechnology | BIO II Q4a | BIO II Q4a(i)-(iii), b | BIO II Q4a(i), (ii)(1), b | BIO II Q4b | BIO II Q4b | BIO II Q4a(ii)-(iii), b | BIO II Q4b | BIO II Q4a, b |
| **Ch 2** Applications in biotechnology | BIO II Q4b(i), (iii)(1), (2) | | | BIO II Q4a | BIO II Q4a(i)-(iii) | BIO II Q4a(i) | BIO II Q4a | |
| **Ch 3** Bioethics | BIO II Q4b(ii), (iii)(3) | BIO II Q4a(iv) | BIO II Q4a, b(ii)(2) | | BIO II Q4a(iv) | BIO II Q4a(iv) | | |

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