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| **Year 10**  **2021\_2022** | **In year 10 you will learn: BIOLOGY:** How plant structures and adaptations help them survive, photosynthesise and get all they need from the environment; How conditions in the body, processes and organs systems are coordinated and controlled. How organisms respond to stimuli, how they interact within a community and the factors that affect their habitat. This builds upon plant and environmental topics in KS3. **CHEMISTRY:** How mass is conserved in chemical reactions and how we can calculate and measure amounts of substances and yields; About energy changes in reactions and how we represent and explain these; How we can calculate and measure rates of reactions, what factors affect the rate of a reaction and equilibrium; About structure, properties and reactions of organic molecules. How we can test and analyse substances to assess structure, identity and purity. How the Earth’s atmosphere has changed over time, the effects and consequences of human activity on the atmosphere and how we can reduce our impact. **PHYSICS:** Key concepts in electricity and the characteristics of some components; What the connection is between energy transfer and power; energy changes and temperature changes and look at how we can monitor the transfer of energy and examine the environmental impact of energy resources. This builds upon the electricity topic and types of energy and energy transfers covered in KS3. |

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **Topic B2 Photosynthesis** | | | | | **Topic B5 Coordination and Control** | | |
| Weekly Homework Tasks | | Mid Topic Assessment |  | End of Topic B2 Test |  |  |  |
| **Numeracy** = surface area to volume  ratio | | Required Practical = effect of light on photosynthesis | |  | **Numeracy** = spread of data | Required Practical = Reaction times | |
| **Collins bio pages 52 –54**  [**https://www.youtube.com/watch?v=J7vgZI1COoE**](https://www.youtube.com/watch?v=J7vgZI1COoE) **(leaf adaptations)**  [**https://www.bbc.co.uk/bitesize/guides/z2jydxs/revision/1**](https://www.bbc.co.uk/bitesize/guides/z2jydxs/revision/1) | | <https://www.youtube.com/watch?v=cBCKedXdFeE>  Collins pages 56 –57 | | <https://www.youtube.com/watch?v=rAJGnS_ktk4> (photosynthesis revision)  Checklist collins page 74 | **Collins pages 160 – 162.**  **Reflex arc collins page 162**  [**https://www.bbc.co.uk/bitesize/guides/z2374qt/revision/3**](https://www.bbc.co.uk/bitesize/guides/z2374qt/revision/3) | <https://www.youtube.com/watch?v=Fm02i4vEi5Q> (required practical –catch a ruler) | |
| **Topic P1 Energy** | | | | | | | **C5 Energy** |
|  | | Mid Topic Assessment |  |  |  | End of Topic P1 Test |  |
|  |  |  | Required Practical = Specific heat capacity | |  |  |  |
| Potential and kinetic energy (collins pages 14 –17)  <https://www.bbc.co.uk/bitesize/guides/ztqjcj6/revision/3> | Calculating “work done” and energy transfer  <https://www.youtube.com/watch?v=fat8qXymSgg> | Understanding power  Collins pages 20-21  <https://www.bbc.co.uk/bitesize/guides/zp8jtv4/revision/2> | Required practical pages 22-23 of collins  <https://www.youtube.com/watch?v=loeRLKNeUsc> (required practical) | | Using energy resources. Compare and Contrast renewable and non-renewable resources  Collins pages 30 –32 <https://www.bbc.co.uk/bitesize/guides/z3tjcwx/revision/1> | Checklist page 40 collins also practice questions pages 42- 44  <https://www.youtube.com/watch?v=tDkBhy-Y1Z8> (whole P1 summary) | Collins page 160 Exothermic and endothermic reactions  <https://www.youtube.com/watch?v=dstRL5xB0Sk>  <https://www.bbc.co.uk/bitesize/guides/z2b2k2p/revision/1> |

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| 9 | 10 | 11 | 12 | 13 | 14 | 15 | **16** |
| **Topic B5 Continued** | | | | | **Topic P2 Electricity** | |  |
| Mid Topic Assessment |  |  |  | End of Topic B5 Test |  |  |  |
|  |  |  |  |  | **Numeracy = Using formulae** | |  |
| <https://www.youtube.com/watch?v=bFnO8Uc9gjQ> (role of insulin) | Negative feedback collins page 174  <https://www.bbc.co.uk/bitesize/guides/z8t47p3/revision/2> | Contraceptives and IVF collins pages 184 –187.  <https://www.youtube.com/watch?v=fOfFr9Q0WWA> (how IVF works) | End of chapter revision questions pages 192 (3 different levels) | Checklist for topic page 190 Collins  <https://www.youtube.com/watch?v=xOfqw7MbU8k> (full revision of B5 biology) | **Series and parallel circuits**  [**https://www.bbc.co.uk/bitesize/guides/zgvq4qt/revision/7**](https://www.bbc.co.uk/bitesize/guides/zgvq4qt/revision/7)  **Collins pages 46 –51**  [**https://www.youtube.com/watch?v=ZQurBlu35Fo**](https://www.youtube.com/watch?v=ZQurBlu35Fo) **(series)**  [**https://www.youtube.com/watch?v=jNFXtjt5muI**](https://www.youtube.com/watch?v=jNFXtjt5muI) **(parallel)** | | Components in circuits (collins pages 52-53)  <https://www.youtube.com/watch?v=AQawCNla5Fg> (components in circuits) |
| **C5 Energy Changes** | | **C3 Quantitative Chemistry** | | | | | **C6 Rates** |
| Mid Topic Assessment | End of Topic C5 Test |  |  | Mid Topic Assessment |  | End of Topic C3 Test |  |
| Required Practical = variables that affect temperature change | | **Numeracy** = Manipulate equations | |  |  |  | **Numeracy** = Slope of a tangent |
| <https://www.youtube.com/watch?v=rdI7xEq4Ew8>  Collins page 162-163 required practical planning  Checklist page 170 (sample questions) <https://www.bbc.co.uk/bitesize/guides/zxxcv9q/revision/1> | | **Collins page 94**  [**https://www.youtube.com/watch?v=it\_fMQu5ivg**](https://www.youtube.com/watch?v=it_fMQu5ivg) **(relative formula mass)**  **Collins page 98 –103 (calculations in chemistry**  [**https://www.bbc.co.uk/bitesize/guides/z3kg2nb/revision/1**](https://www.bbc.co.uk/bitesize/guides/z3kg2nb/revision/1) | | Moles collins page 102-103.  <https://www.youtube.com/watch?v=-_-fNVmDwJk> | Concentrations of moles in solutions  <https://www.bbc.co.uk/bitesize/guides/zgcyw6f/revision/1> | Checklist collins page 114.  <https://www.youtube.com/watch?v=eAibVvhmsK0>sample questions <https://www.bbc.co.uk/bitesize/guides/zs24h39/revision/1> | **Collins page 174 (measuring the rate of reaction)**  [**https://www.bbc.co.uk/bitesize/guides/zsd2bk7/revision/1**](https://www.bbc.co.uk/bitesize/guides/zsd2bk7/revision/1) |

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| 17 | 18 | 19 | 20 | 21 | **22** | 23 | 24 |
| **P2 Continued** | | | | | **Topic B8 Ecology** | | National Science Week |
| Mid Topic Assessment |  |  |  | End of topic P2 Test | Weekly Homework Tasks | |
|  |  |  |  |  |  | |  |
| Required Practical = Circuit characteristics | | Required Practical = Resistance | |  | **Numeracy** = Graph relationships | |  |
| Collins pages 54-55  <https://www.youtube.com/watch?v=ksPfzUjMbBk> (how current changes with potential difference) | | <https://www.youtube.com/watch?v=YsZeZotYVag> (resistance of a wire)  <https://www.bbc.co.uk/bitesize/guides/zpdtv9q/revision/4> Required practical questions | | Collins checklist page 72  <https://www.bbc.co.uk/bitesize/topics/zcg44qt> | **Collins pages 268-271 abiotic and biotic factors**  **Types of competition in environment (Collins pages 272 –275)** | |
| **C6 Rates of reaction and equilibria Continued** | | | | |  | |
|  |  | Mid Topic Assessment |  |  |  | End Of Topic C6 Test |
| Required Practical = Effect of concentration on rate of reaction | |  |  |  |  |  |  |
| <https://www.youtube.com/watch?v=Gl6LVl7oAlU> required practical method  Collins page 184- 185 planning the practical  <https://www.bbc.co.uk/bitesize/guides/zyb4h39/revision/7> | | Factors increasing the rate of reaction P186-187  <https://www.youtube.com/watch?v=-4HXaUBbv04> | Catalysts affecting the rate of reaction.  Collins page p190-191.  <https://www.bbc.co.uk/bitesize/guides/zcyjcj6/revision/5> | Equilibrium in reactions. Collins page 199 – 201.  <https://www.youtube.com/watch?v=ty9TczsW5ew>(reversible reactions and equilibrium) | Equilibrium and pressure Haber process.  Collins page 200-201.  <https://www.bbc.co.uk/bitesize/guides/z26wfcw/revision/2> | Checklist collins page 204.  <https://www.youtube.com/watch?v=7i90fiz9SmY> (summary of whole topic)  <https://www.bbc.co.uk/bitesize/topics/zwdqqhv> (questions and revision) |  |

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| 25 | 26 | 27 | **28** | 29 | 30 | 31 | 32 |
| **B8 Continued** | | **B8 Continued** | | | | | **P3 PARTICLE MODEL OF MATTER** |
|  |  | Mid Topic Assessment |  |  |  | End of Topic B8 Test |  |
| Required practical = Population size | |  |  |  | |  | **Key knowledge concept** = particle model and changes of state  **Numeracy** = Graphing |
| Required practical ecology <https://www.youtube.com/watch?v=yLHz2Ea10Mg> (how factors affect the distribution) | | Animal adaptations ad extremophiles <https://www.youtube.com/watch?v=KvK7EJimAH8> | Plant adaptations (cacti)  Page 280 collins | Cycling materials in the environment  (collins page 284 carbon cycle)  <https://www.youtube.com/watch?v=n_svwXrzMMs> recycling of nutrients  Global warming and climate change <https://www.youtube.com/watch?v=lkqobb34oLI> | | Revision for B8 <https://www.youtube.com/watch?v=SKDn90HK98Q>  Checklist page 300 collins | [**https://www.bbc.co.uk/bitesize/guides/zbg7hyc/revision/1**](https://www.bbc.co.uk/bitesize/guides/zbg7hyc/revision/1) **What is density**  **Collins pages 76-79** |
| **C7 Hydrocarbons** | | | | | | | **Topic C9 Atmosphere** |
|  | |  | Mid Topic Assessment |  | | End of Topic C7 Test |  |
| **Numeracy** = 3D models | |  |  |  | |  |  |
| **Fractional distillation. Collins page 210-212.**  [**https://www.youtube.com/watch?v=86WY2mV9jiU**](https://www.youtube.com/watch?v=86WY2mV9jiU) | | Naming hydrocarbons. Collins page 210  <https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/2> | Properties of hydrocarbons. Collins page 214  <https://www.youtube.com/watch?v=CX2IYWggEBc> | Cracking and alkenes. Collins page 218 –219.  <https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/5> (cracking) | | Checklist collins page 224.  <https://www.bbc.co.uk/bitesize/guides/zshvw6f/test> (practise questions)  Talk through of exam question <https://www.youtube.com/watch?v=eoKSrBHemv0>  <https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/1> (revision) | |

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| **33** | 34 | 35 | 36 | 37 | 38 | 39 |  |
| P3 Cont… | **P3 Cont….** |  | **Year 10 End of Year Exams** | | Consolidation of Yr10 Content , Numeracy and Literacy skill Development  Consolidation of Year 9 B4 and C4 work completed during Covid 19 Lockdown | |  |
| Mid Topic Assessment |  | End of Topic P3 Test |  |
| Required practical = Density |  |  |  |
| Density <https://www.youtube.com/watch?v=lvqu6JAbaKc>  Collins pages 80 –81 | Changes of state <https://www.bbc.co.uk/bitesize/guides/zq7t4j6/revision/3> | Collins checklist page 96  <https://www.youtube.com/watch?v=cZz9oGgJOL0> (whole topic summary) |  |
| **C9 Cont…** | **C9 Cont….** | |  |
| Mid Topic Assessment |  | End of Topic C9 Test |  |
|  |  |  |  |  |  |  |  |
| Earth early Atmosphere. Collins P252  <https://www.bbc.co.uk/bitesize/guides/zg4qfcw/revision/1> | Greenhouse effect. Collins page P258  <https://www.bbc.co.uk/bitesize/guides/zxy4xfr/revision/1>  Human activities. Collins page 260 | Checklist Collins page 274 <https://www.youtube.com/watch?v=gxCRsqXZzeU> (revision summary)  Page 276 sample exam questions |  |  |  |  |  |

<https://connect.collins.co.uk/school/CoursesAction.aspx> (Collins physics, chemistry and biology link)