**B4 – The processes of life**

Go to the BBC Bitesize website. Click on ‘science’, then scroll down to ‘additional science’ and click on ‘additional science (OCR 21C)’, then under the ‘biology’ heading click on ‘The Processes of Life’. By clicking through the revision pages on the website you will find the answers to the questions below. Questions in bold are for higher tier.

Chemical reactions in living things.

1. Complete the table below describing the 7 life processes carried out by all living things.

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| R |  |  |
| S |  |  |
| G |  |  |
| R |  |  |
| E |  |  |
| N |  |  |

2. What do all of the processes require in order to take place?

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3. In which part of the cell do most of the chemical reactions take place?

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4. What is an enzyme?

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5. What do enzymes do when they are at their optimum temperature? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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6. Why does the rate of reaction increase when temperature increases? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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7. What happens to enzymes if they are heated too much? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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8. Why can enzymes not be killed?

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9. Enzymes are specific. What does this mean?

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10. Draw a series of diagrams below showing the lock and key model of enzyme action.

**11. What is the part of the enzyme called where the reacting molecules bind?**

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**12. What happens if the shape of this area is changed?**

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**13. Other than temperature, what else affects the shape of this area?**

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**14. What term is used to describe the permanent change to the active site?**

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**15. What is active transport?**

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**16. Finish this sentence: ‘In active transport, particles move \_\_\_\_\_\_\_\_\_\_\_\_ the concentration gradient’.**

**17. What does active transport require that diffusion and osmosis does not require?**

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**18. What is the name of the molecules that move particles through the membrane by active transport?**

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**19. Where does active transport occur in humans?**

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**Now try the test bite for this section**

How plants make food

20. What is photosynthesis?

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21. What do plants use to absorb light energy?

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22. What is the word equation for photosynthesis?

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23. **What is the balanced symbol equation for photosynthesis?**

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24. What elements make up glucose?

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25. How is glucose used by plants?

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26. Draw a labelled diagram of a plant cell.

27. Draw lines on the table to match the functions to the cell parts.

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| Chloroplasts |  | Strengthens the cell |
| Nucleus |  | Allows gas and water to pass in and out of the cell while controlling the passage of other molecules |
| Cell membrane |  | Contains cell sap to keep the cell turgid |
| Vacuole  |  | Enzymes and other proteins used in photosynthesis are made here |
| Cell wall |  | Contains DNA carrying the genetic code for enzymes and other proteins |
| Cytoplasm |  | Contain chlorophyll and enzymes needed for photosynthesis |

28. What is diffusion?

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29. What type of particles can diffuse?

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30. Give an example of diffusion in plants.

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31. Finish the sentence: Particles will continue to move from \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_ concentration until all of the particles are evenly and randomly distributed’.

32. What is the definition of osmosis?

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33. What is a partially permeable membrane?

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34. How is osmosis different to diffusion?

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35. Why is osmosis important to plants?

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36. **How are root hair cells adapted to absorb water out of the soil by osmosis?**

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**37. What process do plants use to take up mineral ions from the soil?**

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38. What three factors affect the rate of photosynthesis?

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39. What do the graphs for each limiting factor look like?

40. How can farmers use this knowledge to increase crop growth in greenhouses?

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41. How can the effect of light intensity on photosynthesis be investigated?

42. What is a quadrat used for?

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43. How is bias removed when working with quadrats?

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44. What is a transect?

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 **Now try the test bite for this section**

Obtaining energy

45. Which life process releases energy?

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46. What is the difference between aerobic and anaerobic respiration?

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47. What is respiration?

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48. Where does aerobic respiration take place inside the cell?

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49. What is the word equation for aerobic respiration?

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**50. What is the balanced symbol equation for respiration?**

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51. What is the energy released by respiration used for?

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52. What is the word equation for anaerobic respiration in animal cells?

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53. What is the word equation for anaerobic respiration in plant cells and some microorganisms?

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54. Give three examples of when anaerobic respiration can take place.

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55. Which form of respiration produces the most energy?

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56. What uses does anaerobic respiration have in the food industry?

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57. Draw a diagram of a bacterial cell below.

58. Draw a diagram of a yeast cell below.

59. What is fermentation?

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60. What is bioethanol?

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61. What is biogas?

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 **Now try the test bite for this section**