

Biology Portions for First Term Examination – Jan, 2021

Year 9 – Year 13

Year 9

Topic 1 – Key Biological Concepts

1. Microscopes

2. Plant & animal cells.

3. Using Microscopes.

Core practical – Using Microscopes

4. Specialized cells .

5. Inside bacteria.

6. Enzymes & Nutrition.

7. Testing foods.

Core practical – Testing Foods

8. Enzyme action.

9. Enzyme activity.

10.pH & enzymes.

Core practical – pH & enzymes

11. Transporting substances .

12. Osmosis in potato slices.

Core practical – Osmosis in potato slices

Year 10

Topic 1– Key Biological Concepts

1. Microscopes.
2. Plant & animal cells.
3. Using Microscopes.

Core practical – Using Microscopes

4. Specialized cells
5. Inside bacteria.
6. Enzymes & Nutrition.
7. Testing foods.

Core practical – Testing Foods

8. Enzyme action.
9. Enzyme activity.
10. pH & enzymes.

Core practical – pH & enzymes

11. Transporting substances
12. Osmosis in potato slices.

Core practical – osmosis in potato slices

Topic 2– Cells and Control

1. Mitosis.
2. Growth in animals.
3. Growth in plants.
4. Stem cells.

5. The brain.
6. Brain& spinal cord problems.
7. The nervous system.
8. The eye.
9. Neurotransmissions speeds.

Topic 3 – Genetics

1. Sexual and asexual reproduction.
2. Meiosis.
3. DNA.
4. DNA extraction.
5. Protein synthesis.
6. Genetic variants & phenotypes.
7. Mendel.
8. Alleles.
9. Inheritance.
10. Multiple and missing alleles.
11. Gene mutations.

Topic 4– Natural selection and Genetic modification

1. Evidence for human evolution.
2. Darwin's theory.
3. Development of Darwin's theory.

Year 11 (GCSE)

Paper 1

Topic 1– Key Biological Concepts

1. Microscopes.
2. Plant & animal cells.
3. Using Microscopes.

Core practical – Using Microscopes

4. Specialized cells
5. Inside bacteria.
6. Enzymes & Nutrition.
7. Testing foods.

Core practical – Testing Foods

8. Enzyme action.
9. Enzyme activity.
10. pH & enzymes.

Core practical – pH & enzymes

11. Transporting substances .
12. Osmosis in potato slices.

Core practical – osmosis in potato slices

Topic 2 – Cells and Control

1. Mitosis.
2. Growth in animals.

3. Growth in plants.
4. Stem cells.
5. The brain.
6. Brain& spinal cord problems.
7. The nervous system.
8. The eye.
9. Neurotransmissions speeds.

Topic 3– Genetics

1. Sexual and asexual reproduction.
2. Meiosis.
3. DNA.
4. DNA extraction.
5. Protein synthesis.
6. Genetic variants & phenotypes.
7. Mendel.
8. Alleles.
9. Inheritance.
10. Multiple and missing alleles.
11. Gene mutations.
12. Variation.

Topic 4– Natural selection and Genetic modification

1. Evidence for human evolution.
2. Darwin's theory.

3. Development of Darwins theory.
4. Classification.
5. Breeds and varieties.
6. Tissue Culture.
7. Genes in agriculture and medicine.
8. Fertilisers and biological control.

Paper 2

Topic 5 – Health, Disease and the Development of medicines

1. Health and Disease.
2. Non-communicable diseases.
3. Cardiovascular diseases.
4. Pathogens.
5. Spreading pathogens.
6. Virus life cycles
7. Plant defences.
8. Plant diseases.
9. Physical and chemical barriers.
10. Antibiotics.

Core practical – Antibiotics

Topic 6 – Plant Structures and their functions

1. Photosynthesis.
2. Factors that affect photosynthesis
3. Photosynthesis & light intensity

Core practical – Light intensity & Photosynthesis

4. Absorbing water & mineral ions
5. Transpiration & translocation.
6. Plant adaptations.
7. Plant hormones
8. Uses of plant hormones

Topic 7– Animal Coordination ,Control and Homeostasis

1. Hormones.
2. Hormonal control of metabolic rate.
3. The menstrual cycle
4. Hormones & the menstrual cycle
5. Control of blood glucose.
6. Type 2 diabetes.
7. Thermoregulation.
8. Osmoregulation.
9. The kidneys.

Topic 8 – Exchange & transport in animals

1. Efficient transport and exchange
2. Factors affecting diffusion
3. Cellular Respiration

Year 11 (IGCSE)

Paper 1 & 2:

UNIT 1- Organisms & Life Processes

1. Life processes
2. The Variety of living organisms

UNIT 2- Animal Physiology

3. Breathing & Gas exchange
4. Food & Digestion
5. Blood and Circulation
6. Coordination
7. Chemical Coordination
8. Homeostasis& Excretion
9. Reproduction in Humans

UNIT 3 – Plant Physiology

10. Plants and food
11. Transport in plants
12. Chemical Coordination in plants
13. Reproduction in plants

UNIT 5 – Variation & Selection

14. Chromosomes, Genes & DNA
15. Cell Division
16. Genes and Inheritance

Year 11 (IGCSE)

Paper 2 only

UNIT 1- Organisms & Life Processes

1. Explain the importance of cell differentiation in the development of specialised cells
2. Understand the advantages and disadvantages of using stem cells in medicine

UNIT 2- Animal Physiology

3. Practical: investigate how enzyme activity can be affected by changes in pH
4. Practical: investigate the energy content in a food sample
5. Understand the role of diffusion in gas exchange
6. Understand how vaccination results in the manufacture of memory cells, which enable future antibody production to the pathogen to occur sooner, faster and in greater quantity
7. Understand how platelets are involved in blood clotting, which prevents blood loss and the entry of micro-organisms
8. Understand how the kidney carries out its roles of excretion and osmoregulation
9. Describe the structure of the urinary system, including the kidneys, ureters, bladder and urethra
10. Describe the structure of a nephron, including the Bowman's capsule and glomerulus, convoluted tubules, loop of Henle and collecting duct
11. Describe ultrafiltration in the Bowman's capsule and the composition of the glomerular filtrate
12. Understand how water is reabsorbed into the blood from the collecting duct

13. Understand why selective reabsorption of glucose occurs at the proximal convoluted tubule
14. Describe the role of ADH in regulating the water content of the blood
15. Understand that urine contains water, urea and ions
16. Understand the sources, roles and effects of the following hormones: ADH, FSH and LH
17. Understand the roles of FSH and LH in the menstrual cycle

UNIT 3 – Plant Physiology

18. Understand gas exchange (of carbon dioxide and oxygen) in relation to respiration and photosynthesis
19. Understand how the structure of the leaf is adapted for gas exchange
20. Describe the role of stomata in gas exchange
21. Understand how respiration continues during the day and night, but that the net exchange of carbon dioxide and oxygen depends on the intensity of light
22. Practical: investigate the effect of light on net gas exchange from a leaf, using hydrogen-carbonate indicator
23. Understand how water is absorbed by root hair cells
24. Understand that transpiration is the evaporation of water from the surface of a plant
25. Understand how the rate of transpiration is affected by changes in humidity, wind speed, temperature and light intensity
26. Practical: investigate the role of environmental factors in determining the rate of transpiration from a leafy shoot

UNIT 5 – Variation & Selection

27. Describe a DNA molecule as two strands coiled to form a double helix, the strands being linked by a series of paired bases: adenine (A) with thymine (T), and cytosine (C) with guanine (G)
28. Understand that an RNA molecule is single stranded and contains uracil (U) instead of thymine (T)
29. Describe the stages of protein synthesis including transcription and translation, including the role of mRNA, ribosomes, tRNA, codons and anticodons
30. Understand the meaning of the term codominance

Year 12

Topic 1- Biological molecules

- 1.1-Chemistry for life.
- 1.2-Biological molecules 1.
- 1.3-Biological molecules 2.
- 1.4-Enzymes.

Topic 2- Cells and viruses

- 2.1-Eukaryotic cells.
- 2.2-Prokaryotic cells.

Year 13

Biology B (2)- Book 1 – Paper 1

Topic 1- Biological molecules

- 1.1 Chemistry for life.
- 1.2 Biological molecules 1
- 1.3 Biological molecules 2
- 1.4 Enzymes.

Topic 2- Cells and viruses

- 2.1- Eukaryotic cells.
- 2.2- Prokaryotic cells.
- 2.3 -Eukaryotic cell division- mitosis.
- 2.4 -Meiosis and sexual reproduction.

Topic 3- Classification

- 3.1- Classification
- 3.2- Natural selection
- 3.3-Biodiversity

Topic 4 – Exchange and transport

- 4.1- Cell transport mechanisms
- 4.2- Gas exchange
- 4.3- Circulation
- 4.4- Transport in plants

Biology B (2) Book 2- Paper 2

Topic 5- Energy for life processes

5.1- Cellular Respiration

5.2-Photosynthesis

Topic 6- Microbiology and pathogens

6.1- Bacteria and disease

6.2.-Non bacterial pathogens

6.3- The response to infection

Topic 7 – Modern genetics

7.1 -Using gene sequencing

7.2 -Factors affecting gene expression

7.3 -Gene technology

Topic 8- Origins of genetic variation

8.1-Genetic information

8.2- Gene pools