

FORM 4 BIOLOGY - SUMMER REVISION WORK

Topic: The Chemicals of life

- **Balanced diet**
- **Importance of carbohydrates, proteins and fats**
- **Minerals (iron, calcium and phosphorus)**
- **Importance of the minerals nitrogen and magnesium in plants**
- **Vitamins A, C and D**
- **Importance of fibre and water**
- **Food tests**

Revision examples from Biology SEC past papers

September 2008 Paper 2B No 8

May 2010 Paper 1 No 2

May 2011 Paper 2A No 7

September 2014 Paper 1 No 2(a) and (b)

Topic: Osmosis

- **Osmosis in plant cells (turgid vs. plasmolysed)**
- **Osmosis in animal cells**
- **Isotonic, hypertonic and hypotonic solutions**

Revision examples from Biology SEC past papers

May 2008 Paper 2A No 6

September 2008 Paper 1 No 9

May 2010 Paper 1 No 3

May 2012 Paper 1 No 7

May 2015 Paper 1 No 2

Topic: Enzymes

- Lock and key mechanism
- Naming enzymes
- Properties of enzymes
- Sensitivity of enzymes to pH and temperature
- Uses of enzymes in biological washing powders and production of cheese

Revision examples from Biology SEC past papers

May 2008 Paper 2A No 2

May 2012 Paper 2A No 6

May 2013 Paper 1 No 4

September 2013 Paper 1 No 9b

September 2014 Paper 1 No 9

May 2015 Paper 1 No 3

Topic: Anaerobic and Aerobic respiration

- Aerobic respiration (including equation)
- The importance of ATP
- Anaerobic respiration in yeast (including equation)
- Anaerobic respiration in muscles
- Economic uses of anaerobic respiration (production of beer, wine, bread, vinegar etc.)

Revision examples from Biology SEC past papers

May 2008 Paper 2A No 1

September 2008 Paper 1 No 3

May 2010 Paper 1 No 7

May 2011 Paper 1 No 3

May 2012 Paper 1 No 4

May 2015 Paper 2A No 2

Topic: Photosynthesis + External and internal structure of a leaf

- Raw materials for photosynthesis (including equation)
- Products of photosynthesis
- Testing a plant for glucose and starch
- Experiments to test the importance of chlorophyll, carbon dioxide and light for photosynthesis
- Experiment to test whether oxygen is produced during photosynthesis
- Rate of photosynthesis (including experiment how to test whether light intensity effects the rate of photosynthesis)

Revision examples from Biology SEC past papers

September 2013 Paper 1 No 7

September 2014 Paper 1 No 4

May 2015 Paper 1 No 5

May 2015 Paper 2A No 4

Topic: Gaseous Exchange

- Properties of an efficient respiratory system
- Gaseous exchange in protists, insects, fish, plants and humans (including diagrams)
- Ventilation with the help of intercostal muscles and diaphragm in humans
- Exchange of gases in alveoli
- Rate of breathing
- The effects of smoking and air pollution

Revision examples from Biology SEC past papers

September 2008 Paper 2B No 7

May 2010 Paper 2A No 3

May 2011 Paper 1 No 9

May 2013 Paper 2A No 7

September 2014 Paper 2B No 1

May 2015 Paper 1 No 9

Topic: Excretion and Osmoregulation

- Excretion in plants
- Excretion in protists (osmoregulation)
- Excretion in mammals
- The human kidney (including diagram)
- Deamination
- Ultrafiltration and selective reabsorption
- Formation of urine

Revision examples from Biology SEC past papers

May 2008 Paper 1 No 5

May 2010 Paper 1 No 10

May 2012 Paper 1 No 3

September 2013 Paper 1 No 5

May 2015 Paper 2A No 3

Topic: Transport Systems

- Xylem vs. phloem vessels in plants
- Cross section of a root and dicot stem in plants
- Transport of water, food and minerals in plants
- The structure of arteries, veins and capillaries in humans
- The double circulatory system
- The heart (including diagram)
- Cardiac cycle and heart diseases
- Pulmonary vs. systemic circulation
- Body fluids (blood, tissue fluid and lymph)

Revision examples from Biology SEC past papers

May 2008 Paper 1 No 3 and 9

September 2008 Paper 1 No 6

May 2011 Paper 1 No 5 and 6

May 2012 Paper 2A No 1

May 2013 Paper 2A No 3

September 2013 Paper 1 No 8 and 10(b)

September 2014 Paper 1 No 1

Topic: Digestion + Herbivore dentition and gut adaptations

- The five stages of animal nutrition
- Nutrition in the *Amoeba*
- The different organs of the alimentary canal
- Importance of the liver, gall bladder and pancreas
- Dentition in herbivores vs. carnivores
- The alimentary canal of a typical ruminant and hind gut fermenter

Revision examples from Biology SEC past papers

May 2008 Paper 1 No 10

September 2008 Paper 1 No 1

May 2010 Paper 2A No 4

May 2012 Paper 1 No 2

May 2012 Paper 1 No 9

May 2013 Paper 1 No 5

May 2013 Paper 2A No 1

September 2014 Paper 2B No 5