

Higher Biology

SQA Extended Response Questions

Units 1, 2 and 3



Unit 1			
Key area	Year	Question	Allocated marks
1.2	2014 specimen	Describe DNA under the following headings. (i) Structure of DNA (ii) Replication of DNA	9
1.3	2015	Write notes on gene expression in eukaryotes under the following headings: (i) production of mRNA; 5 (ii) translation of mRNA. 4	9
1.4	2012 RH	Write notes on stem cells under the following headings: (i) differentiation of stem cells; 7 (ii) research into stem cells and their therapeutic value. 3	10
1.4	2014 RH	Give an account of stem cells, their therapeutic use and the ethical issues surrounding their use.	8
1.6	2015	Write notes on mutation under the following headings: (i) single gene mutations; 4 (ii) chromosome mutations and polyploidy. 5	9
1.7	2014 specimen	Describe the evolution of new species under the following headings. (i) Isolation and mutation (ii) Selection	9
1.7	2012 RH (adapted)	Write notes on evolution under the following headings: (i) natural selection; 5 (ii) genetic drift. 3	8
1.8	2014 RH	Give an account of genomics and its importance in phylogenetics and personalised medicine.	8

Unit 2

Key area	Year	Question	Allocated marks
2.1a	2016	Describe and compare anabolic and catabolic reactions.	4
2.1b	2013 RH	Give an account of enzyme action and enzyme inhibition.	8
2.1b	2015	Describe competitive and non-competitive inhibition of enzyme action.	4
2.2	2013 RH	Give an account of glycolysis and the citric acid cycle in cells.	8
2.2	2015 RH	Give an account of the structure of the inner membranes of mitochondria and the function of the electron transport chain in cellular respiration.	8
2.3	2015	Describe the arrangement of heart chambers in birds and amphibians and relate this to their metabolic rates.	4
2.4	2016	Describe and compare metabolism in conformers and regulators.	4
2.5	2014 specimen	Describe how animals survive adverse conditions.	4
2.6	2015 RH	Give an account of the general pattern of growth of microorganisms and the conditions needed for their culture.	8
2.7	2014 specimen	Describe recombinant DNA technology.	4

Unit 3

Key area	Year	Question	Allocated marks
3.1a	2014 RH	Write notes on human food supply under the following headings: (i) food security and population; 3 (ii) factors affecting food production. 7	10
3.1b	2013 RH	Write notes on photosynthesis under the following headings: (i) energy capture and photosynthetic pigments; 4 ii) use of captured energy and the light dependent stage 6	10
3.1b	2012 RH	Give an account of the capture of light energy and its conversion into chemical energy in the light dependent stage of photosynthesis.	8
3.3	2016	Write notes on crop protection under the following headings: (i) weeds, pests and diseases; 4 (ii) methods of control. 4	8
3.5	2012 RH	Give an account of parasitism and mutualism as types of symbiosis.	8
3.6	2016	Write notes on social behaviour in animals under the following headings: (i) social hierarchy and cooperative hunting; 4 (ii) social insects. 4	8
3.6	2013 RH	Write notes on social behaviour under the following headings: (i) altruism and kin selection; 5 (ii) primate behaviour. 5	10
3.7 & 3.8	2014 RH	Write notes on biodiversity under the following headings: (i) measuring biodiversity; 4 (ii) threats to biodiversity. 6	10

