Paper 1 (4SS0/1B)

Question number	Answer	Additional guidance	Mark
1(a)(i)	A description that makes reference to the following two points: • release of energy (1) • within cells (1)	reject production of energy	**2**

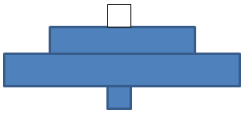
Question number	Answer	Additional guidance	Mark
1(a)(ii)	A description that makes reference to the following points: • keeping named characteristic, e.g. temperature (1) • constant within narrow range (1)	allow blood glucose/carbon dioxide/blood pressure/water content/equivalent	**2**

Question number	Answer	Mark
1(b)	C	**1**

Question number	Answer	Mark
1(c)	C	**1**

Total for Question 1 = 6 marks

Question number	Answer	Mark
2(a)	Vole	**1**

Question number	Answer	Additional guidance	Mark
2(b)(i)	A drawing that includes the following points: • organisms named (1) • in correct order (1) • correct shape (1)		**3**

Question number	Answer	Mark
2(b)(ii)	A description that makes reference to the following points: • larger base for oak tree (1) • pyramid/equivalent shape described (1)	**2**

Question number	Answer	Additional guidance	Mark
2(b)(iii)	An explanation that makes reference to three of the following points: • not all energy transferred between each level (1) • less energy at each stage (1) • fewer organisms/less biomass supported (1) • example of energy loss, e.g. to enable respiration/not all organism eaten/not all digested/some excreted/equivalent (1)	reject energy used in respiration	**3**

Total for Question 2 = 9 marks

Question number	Answer	Mark
3(a)(i)	An explanation that makes reference to the following five points: • training improves performance by increasing the number of capillaries (1) • better supply of oxygen/aerobic (1) • better supply of glucose (1) • respiration/energy/ATP (1) • muscle contraction (1) • better removal of lactic acid/carbon dioxide (1) • can run for longer/equivalent (1)	**5**

Question number	Answer	Mark
3(a)(ii)	An answer that makes reference to two of the following points: • use more people (1) • extend training period (1) • compare different ages/genders (1)	**2**

Question number	Answer	Additional guidance	Mark
3(b)(i)	Multiplication • 0.008 (1) Division • 25 ÷ 0.008 = 3125 = 3100 (1)	award full marks for correct numerical answer without working accept 3125 the final answer should reflect the precision of the least precise data (in this case two sig figs)	**2**

Question number	Answer	Additional guidance	Mark
3(b)(ii)	An explanation that makes reference to two of the following points: • wall contains muscle/elastic tissue (1) • blood is under high pressure from the left ventricle (1) • aorta needs to expand (1) • need to transport more blood (1)	allow converse	**2**

Total for Question 3 = 11 marks

Question number	Answer	Additional guidance	Mark
4(a)	An explanation that makes reference to two of the following points: • dominant allele always expressed (1) • dominant expressed in heterozygote (and homozygote)/recessive allele not expressed in heterozygote (1) • recessive allele only expressed in phenotype of homozygote/equivalent (1)	allow seen/visible	**2**

Question number	Answer	Additional guidance	Mark
4(b)	A genetic diagram including: • parents Nn and Nn (1) • gametes N or n (1) • genotypes of offspring NN Nn Nn nn and phenotypes correctly assigned (1)	allow max 3 for transfer error allow all marks from Punnett square	**3**

Question number	Answer	Additional guidance	Mark
4(c)	An answer that makes reference to the following points: • Nn not affected/killed by malaria/survive (1) • reproduce (1) • so number of Nn individuals increase (1) • so number of nn individuals increases/frequency of (n) allele increases (1)	allow converse for NN	**4**

Total for Question 4 = 9 marks

Question number	Answer	Mark
5(a)(i)	C	1

Question number	Answer	Mark
5(a)(ii)	B	1

Question number	Answer	Mark
5(b)(i)	A description that makes reference to four of the following points: • place leaf in boiling water (1) • place leaf in boiling ethanol (1) • use water bath/safe heating/no naked flame (1) • place leaf in water (1) • place leaf in iodine solution (1) • blue/black indicates starch; orange/yellow indicates no starch (1)	4

Question number	Answer	Additional guidance	Mark
5(b)(ii)	A drawing showing the following: • white part labelled orange/yellow/no starch (1) • green part labelled blue/black/starch (1)	allow approximate shape	2

Question number	Answer	Mark
5(c)	A method that includes two of the following points: • trace around the leaf/use transparent paper/equivalent (1) • trace around the green part (1) • put onto squared paper (1) • count the number of squares (1) • reference to both sides of leaf being measured (1)	2

Total for Question 5 = 10 marks

Question number	Answer	Mark
6	An answer that makes reference to six of the following points: • C range of different pHs/use acid and alkali/use buffer solutions (1) • O amylase from same source/starch being digested from same source (1) • R repeat readings at each pH (1) • M1 how rate of digestion judged e.g. change in iodine test for starch/(time until) no change in iodine solution/(time until) production of positive Benedict's test (1) • M2 reference to time period (1) • S1 and S2 variables kept constant e.g. same volume of amylase/same concentration of amylase/same mass of substrate/same temperature or use of water bath (2)	**6**

Total for Question 6 = 6 marks

Question number	Answer	Additional guidance	Mark
7(a)(i)	An explanation that makes reference to the following: • to exclude oxygen (1) • ensure respiration is anaerobic (1)	ignore reference to air	**2**

Question number	Answer	Additional guidance	Mark
7(b)(i)	• Addition of readings 10 + 12 + 11 + 14 = 47 (1) • Division by 4 47 ÷ 4 = 12 (11.75) (1) round to 12 for correct sig figs	award full marks for correct numerical answer without working	**2**

Question number	Answer	Additional guidance	Mark
7(b)(ii)	• Subtraction of means 14 – 6 =8 (1) • Division by original rate x 100 8 ÷ 6 = 1.33 × 100 = 133% (1)	award full marks for correct numerical answer without working	**2**

Question number	Answer	Additional guidance	Mark
7(b)(iii)	An explanation that makes reference to three of the following points: • increased temperature causes vibrations/ breaks bonds (1) • causes change in shape of active site (1) • enzyme denatures (1) • substrate can no longer fit in/bind with enzyme (1)	reject reference to enzyme being killed	**3**

Total for Question 7 = 9 marks

TOTAL FOR PAPER = 60 MARKS