



Mark Scheme (Results)

Summer 2023

Pearson Edexcel International GCSE
In Single Science Award (4SS0)
Paper 1B

Question Number	Answer	Mark
1(a)	<p>An answer that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • nutrition / feeding / eq (1) • respire / eq (1) • excrete / eq (1) • respond to their surroundings / eq (1) • move /eq (1) • control their internal conditions / homeostasis /eq (1) • reproduce / eq (1) • grow / develop / eq (1) 	2

Question Number	Answer	Mark
1(b)(i)	<p>The only correct answer is C hypha</p> <p>A is not correct as they do not contain chloroplasts</p> <p>B is not correct as they do not contain cellulose cell wall</p> <p>D is not correct as they do not contain plasmids</p>	1

Question Number	Answer	Mark
1(b)(ii)	<p>The only correct answer is C <i>Mucor</i></p> <p>A is not correct as <i>Amoeba</i> is not a fungus</p> <p>B is not correct as <i>Chlorella</i> is not a fungus</p> <p>D is not correct as <i>Plasmodium</i> is not a fungus</p>	1

Question Number	Answer	additional guidance	Mark
1(c)	<p>An explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • cannot reproduce / eq (1) • without host cell / eq (1) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • do not have cellular structure /cells / eq (1) • living organisms have cells / eq (1) <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • they do not respire / do not grow / do not excrete / do not respond to stimuli (1) • do not show characteristics / features of living organisms /eq (1) 	<p>only reproduce within host /eq</p> <p>ignore don't have nucleus</p> <p>do not respire or grow =1</p> <p>do not show features of living organisms =1</p> <p>do not respire have features of living organisms =2</p>	2

Total = 6 marks

Question Number	Answer	Mark
2(a)(i)	<p>The only correct answer is A O is part of the large intestine</p> <p>B is not correct as P is the liver</p> <p>C is not correct as Q is the oesophagus</p> <p>D is not correct as S is the small intestine</p>	1

Question Number	Answer	Mark
2(a)(ii)	<p>The only correct answer is D T the rectum stores faeces</p> <p>A is not correct as P is the liver</p> <p>B is not correct as Q is the oesophagus</p> <p>C is not correct as R is the stomach</p>	1

Question Number	Answer	Mark
2(b)	<p>A description that makes reference to four of the following points:</p> <ol style="list-style-type: none"> 1. digestion / break down / eq (1) 2. of starch to glucose / maltose 3. starch by amylase (1) 4. of protein to peptides / amino acids (1) 5. protein by protease / eq (1) 6. lipid to fatty acids / glycerol 7. lipid by lipase (1) 8. absorption (1) 9. in villi (1) 	4

Question Number	Answer	additional guidance	Mark
2(c)	<p>An answer that makes reference to five of the following points:</p> <ol style="list-style-type: none"> 1. starch in W / Z (1) 2. sugar / glucose in W/ Y / Z (1) 3. protein in W / X (1) 4. lipid in W / Y (1) 5. most sugar in W / less sugar in Z (1) 	ignore carbohydrates	5

Total = 11 marks

Question Number	Answer	additional guidance	Mark
3(a)	<ul style="list-style-type: none"> • measurement of XY in mm • conversion of mm into μm • divide image size by actual size <p>63.6 / 63.63 etc / 64 (3)</p> <p>allow any value between 61.8- 66 for 3 marks</p>	<p>70 mm $70 \times 1000 = 70\ 000$ $70\ 000 \div 1100$</p> <p>allow 1 mark for correct measurement 68 -72 (no units) or 6.8 - 7.2 cm</p> <p>and</p> <p>allow 1 mark for x 1000 or \div 1000 OR one mark for dividing by 1100</p> <p>so correct measurement and x 1000 = 2 marks eg 68000 - 72000</p>	3

Question Number	Answer	additional guidance	Mark
3(b)	<p>A description that includes three of the following :</p> <ul style="list-style-type: none"> • B near upper surface / B nearer sunlight / eq (1) • B layer one cell thick / B smaller / / eq (1) • B closely packed / /eq (1) • B many chloroplasts / eq (1) • B rectangular shape / B only one type / / eq (1) • B no veins / B no xylem / B no phloem / eq (1) 	<p>converse for C</p> <p>C nearer lower surface/eq</p> <p>C several cells thick/ C larger/eq</p> <p>C spaced /(air) spaces/ spongy/eq</p> <p>C fewer chloroplasts/eq</p> <p>C spherical / rounded / different cell types/eq</p> <p>C veins/ vascular bundles / xylem / phloem/eq</p>	3

Question Number	Answer		Mark
3(c)	<p>An explanation that makes reference to five of the following points:</p> <ol style="list-style-type: none"> 1. A / waxy cuticle to prevent evaporation of water /eq (1) 2. A / waxy cuticle prevents entry of bacteria / virus/ / fungi / pathogen / eq (1) 3. A / epidermis transparent / allows light to pass through / in eq / (1) 4. B / palisade mesophyll (cells) contain chloroplasts / chlorophyll to absorb light / eq (1) 5. B / palisade mesophyll (cells) / arranged vertically to absorb light /eq (1) 6. B / palisade mesophyll (cells) near upper surface for more light / to absorb light / eq (1) 7. B / palisade mesophyll packed tightly to absorb light / eq (1) 8. B contains veins/xylem/ vascular bundle / to bring water/eq (1) 9. B / for photosynthesis (1) 	<p>not entry of organisms</p> <p>contain chloroplasts for photosynthesis = mp 9 only</p> <p>allow near to sunlight</p>	5

Total = 11 marks

Question Number	Answer	Additional guidance	Mark
4(a)	<p>An answer that makes reference to 5 of the following points:</p> <ul style="list-style-type: none"> • S y axis scale linear and half the grid (1) • A axis X labelled distance Y labelled number of plants (1) • Units Y axis in plants g per 100 m²/ Y units m (1) • P bars plotted correctly within one (1) • K key / each bar labelled with species A Species B (1) 	<p>if not linear lose S and P allow // truncated</p> <p>line graph scores 4 max</p> <p>allow side by side of on top</p>	5

Question Number	Answer	additional guidance	Mark
4(b)	<p>A description that makes reference to three of the following points:</p> <ol style="list-style-type: none"> 1. use quadrat / eq (1) 2. count plants / record number / record quantity / eq (1) 3. repeat / use quadrats /eq (1) 4. add total number of species and divide by number of quadrats used / multiply by area to obtain mean per 100 m² (1) 	ignore random	3

Question Number	Answer	additional guidance	Mark
4(c)	<p>An answer that makes reference to four of the following points:</p> <ol style="list-style-type: none"> 1. fewer plants (per 100 m²) of species B than A / eq (1) 2. species A at highest frequency / most nearest to mine /eq (1) 3. species A (more) tolerant / can tolerate higher concentration of copper than B / eq (1) 4. species B grows most / frequency highest at 0.61 to 1.20 / eq (1) 5. both species are tolerant of copper / eq (1) 6. both species drop further from mine / as distance increase / eq (1) 7. as more competition from other species / eq (1) 8. higher frequency/ number of species B above 2.40 m / eq (1) 	<p>more A than B</p> <p>less A away from mine</p> <p>B less tolerant</p> <p>A lower above 2.4m</p>	4

Total= 12 marks

Question Number	Answer	additional guidance	Mark
5	<p>An answer that makes includes five of the following points:</p> <ul style="list-style-type: none"> • gene (1) • transgenic (1) • restriction / endonuclease (1) • ligase (1) • join / stick / combine / bond / eq (1) 	<p>allow allele</p> <p>ignore plasmid</p>	5

Total = 5 marks

Question Number	Answer	Mark
6(a) (i)	P = sperm duct / vas deferens /(1) Q = testis / testicle (1)	2

Question Number	Answer	additional guidance	Mark
6(a)(ii)	A description that includes two of the following: <ul style="list-style-type: none"> • inserted into /put into vagina /eq (1) • copulation / ejaculation / intercourse / eq (1) • transfers / releases sperm / semen /eq (1) 	transfers sperm into vagina = 2	2

Question Number	Answer	additional guidance	Mark
6(b)(i)	An answer that includes : <ul style="list-style-type: none"> • (parents) XX and XY (1) • (gametes) X and Y (1) • (offspring) XX and XY (1) 	do not need to be labelled if can follow allow in all marks from Punnett square	3

Question Number	Answer	additional guidance	Mark
6(b)(ii)	An answer that includes : probability of one male = 0.5 probability of 3 males = $0.5 \times 0.5 \times 0.5 / \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ = 0.125 or 1/8 or 12.5%	0.5 / 1/2 50% score s one	2

Total = 9 marks

Question Number	Answer	additional guidance	Mark
7	<p>An answer that makes reference to six of the following points</p> <ul style="list-style-type: none"> • C use different coloured lamps / filters / wavelengths of light (1) • O use same species / type / mass / size / age of plant / eq (1) • R repeat (for each colour) / eq (1) • M1 count bubbles (of oxygen produced)/ cm³ / volume (of oxygen produced) / eq (1) • M2 stated time / per minute / eq (1) • S1 equivalent same light (intensity) / light same distance / same carbon dioxide concentration / eq (1) • S2 same temperature / mineral ions in water / eq (1) 	<p>allow height</p> <p>allow any stated time</p>	6

Total = 6 marks