Pearson Edexcel

Mark Scheme (Results)

Summer 2019

Pearson Edexcel International Advanced Level
In Biology (WBI03) Paper 01
Practical, Biology and Research Skills

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Summer 1906
Publications Code WBI03_01_1906_MS

General Marking Guidance

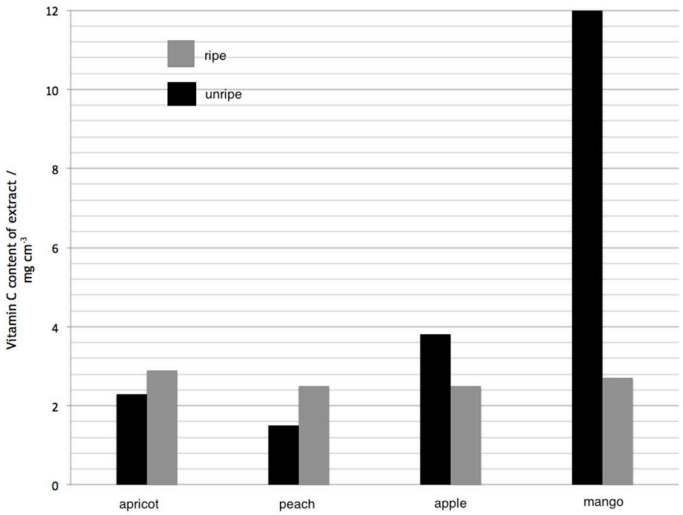
- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

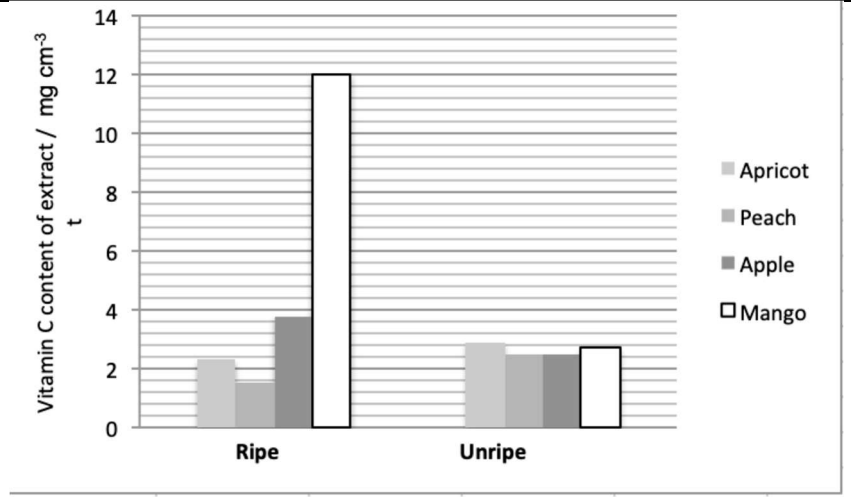
Question Number	Answer	Additional Guidance	Mark
1(a)(i)	1. ripeness / eq ; 2. vitamin C content (of extract / fruits) ;	**ACCEPT** ripe and unripe **ACCEPT** type of fruit **ACCEPT** volume of extract added (to decolourise DCPIP)	**(2)**

Question Number	Answer	Additional Guidance	Mark
1(a)(ii)	1. mass of fruit ; 2. volume of (distilled) water ; 3. time for ripening / age of fruit ; 4. extraction method qualified ; 5. temperature ; 6. pH ;	**ACCEPT** size / volume **ACCEPT** a stated volume, e.g. $10cm^3$ e.g. time of shaking / crushing method	**(2)**

Question Number	Answer	Additional Guidance	Mark
1(a)(iii)	1. {take the residue / eq} (from the filter paper) ; 2. add (distilled) water to it ; 3. test for vitamin C (with DCPIP) to show no decolourisation (to show assumption is right) / eq ;	 **ACCEPT** reverse argument to show assumption is wrong	**(3)**

Question Number	Answer	Additional Guidance	Mark
1(b)(i)	1. 1 ÷ 2.2 / 6 ÷ 2.2 / 0.45 ; 2. 0.45 x 6 = 2.7 / 2.73 ;	1. **ACCEPT** 0.5 2. **ACCEPT** 0.5 x 6 = 3.0 Correct answer with no working gains full marks	**(2)**

Question Number	Answer	Additional Guidance	Mark
1(b)(ii)	B bar chart ; A axes correctly labelled as (x – has bars identified by fruits named / eq), (y- vitamin C content of extract / mg cm^{-3}) ; K ripeness indicated with {key / eq} ; P correct plotting ; S suitable linear scale on both axes ;	S, half of grid minimum, do not accept discontinuity sample graphs  	**(5)**

Question Number	Answer	Additional Guidance	Mark
1(b)(iii)	1. in {two fruits / apricot and peach / eq} ripening increases vitamin C ; 2. in {two fruits / apple and mango / eq} ripening decreases vitamin C ; 3. idea that peach has biggest increase on ripening ; 4. idea that mango has biggest decrease on ripening ;		**(4)**

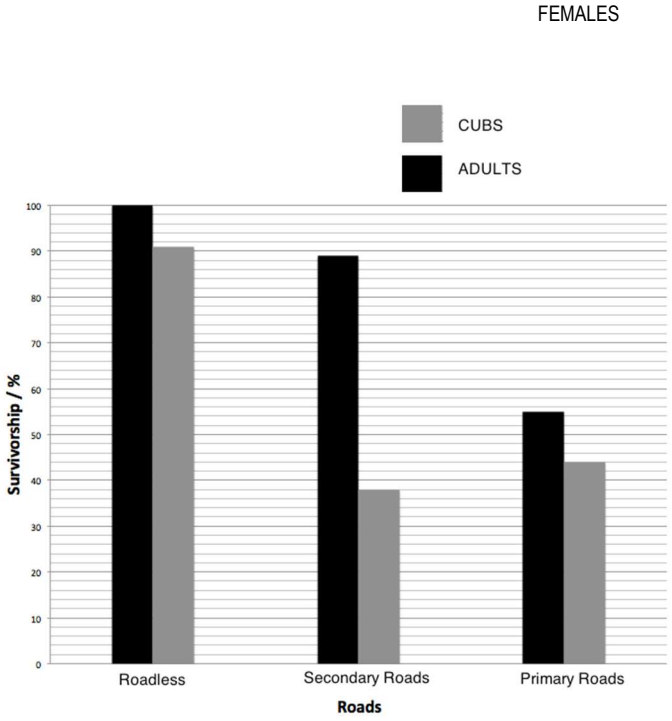
	5. (ripe peach) {1 mg cm^{-3} / 67%} more than unripe OR (ripe mango) {9.3 mg cm^{-3} / 78%} less than unripe ;	**DO NOT ACCEPT** any other manipulations	

Question Number	Answer	Additional Guidance	Mark
1(c)	1. plot the {mean / average} ; 2. plot {standard deviation / standard error / error bars / range bars} ;		**(2)**

Question Number	Answer	Additional Guidance	Mark
2(a)	1. the (possible) extinction of tigers / eq ;	**ACCEPT** tigers are endangered / decreased numbers of tigers **IGNORE** refs to human-tiger conflict	**(1)**

Question Number	Answer	Additional Guidance	Mark
2(b)(i)	1. loss of habitat / human-tiger conflict / eq ;	e.g. hunting tigers	**(1)**

Question Number	Answer	Additional Guidance	Mark
2(b)(ii)	1. reducing logging ; 2. reducing grazing ; 3. reduce use of fires ; 4. human settlements developed away from tiger areas / stop settlements near tiger areas ; 5. {no roads / closed roads} in tiger areas ; 6. reduction in poaching / eq ; 7. move tigers to {other areas / zoos} / monitor tigers; 8. education ;	of tigers or prey e.g. conservation programmes	**(2)**

Question Number	Answer	Additional Guidance	Mark
2(c)	1. one suitable {bar graph / table / pie chart} drawn ; 2. six {bars / segments} with correct proportions or {cells} with correct data entered ; 3. {bars & axes / headings / segments} {correctly fully labelled / partially labelled and with key} ;	Sample visuals  percentage survival / % (3) | Tigers | no roads | secondary road | primary road | | --- | --- | --- | --- | | Adult females | 100 | 89 | 55 | | cubs | 91 | 38 | 44 |	**(3)**

Question Number	Answer	Additional Guidance	Mark
2(d)	1. because it lives in **only** {one region / location} / eq} ; 2. found in eastern Russia, north east China and north Korea ;	e.g. tigers are found **only** in eastern Russia and nearby north east China and north Korea gains mps 1 and 2 e.g. tigers are found **only** in eastern Russia gains mp 1 only	**(2)**

Question Number	Answer	Additional Guidance	Mark
2(e)	1. find the **species richness** ; 2. {count / eq} the number of species (found in the area / the habitat / it) / eq ; 3. find the genetic diversity 4. determine the variety of alleles (in gene pools) ;	**ACCEPT** find heterozygosity	**(3)**

Question Number	Answer	Additional Guidance	Mark
2(f)	1. idea that {populations are becoming separated / habitat is being broken up} ;	**ACCEPT** habitats isolated	**(2)**

	2. reduced outbreeding / eq ;	**ACCEPT** increased inbreeding	

Question Number	Answer	Additional Guidance	Mark
2(g)	1. idea of economic benefits ; 2. employment qualified ; 3. idea of {ecosystem / habitat} maintenance ; 4. to supply {food / water} for humans ;	2. e.g. ecotourism jobs	**(2)**

Question Number	Answer	Additional Guidance	Mark

2(h)	1. all 6 elements present with no extras i.e. names, date, article title, journal, volume number and pages do not award if “vol.”, “pages”, “pp” , etc., are included ; 2. order correct ; 3. reference has name(s) followed by initial(s) ; 4. reference has {et al / (and) others} ;	2. there must be a minimum of 4 elements in the correct order to judge this **ACCEPT** Linda, L. / Linda, K. / Linda, L.K. 4. e.g. Kerley, L. L. et al 2002 Effects of Roads and Human Disturbance on Amur Tigers, Conservation Biology 6, 1, 97-108.	**(4)**

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