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Mark Scheme (Results)

June 2011

GCE Biology (6BI07) Paper 01
Practical Biology and Research (WA)

PEARSON

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GENERAL INFORMATION

The following symbols are used in the mark schemes for all questions:

Symbol	Meaning of symbol
; semi colon	Indicates the end of a marking point
Eq	Indicates that credit should be given for other correct alternatives to a word or statement, as discussed in the Standardisation meeting
/ oblique	Words or phrases separated by an oblique are alternatives to each other
{} curly brackets	Indicate the beginning and end of a list of alternatives (separated by obliques) where necessary to avoid confusion
() round brackets	Words inside round brackets are to aid understanding of the marking point but are not required to award the point
[] square brackets	Words inside square brackets are instructions or guidance for examiners
[CE] or [TE]	Consecutive error / transferred error

Crossed out work

If a candidate has crossed out an answer and written new text, the crossed out work can be ignored. If the candidate has crossed out work but written no new text, the crossed out work for that question or part question should be marked, as far as it is possible to do so.

Spelling and clarity

In general, an error made in an early part of a question is penalised when it occurs but not subsequently. The candidate is penalised once only and can gain credit in later parts of the question by correct reasoning from the earlier incorrect answer.

No marks are awarded specifically for quality of language in the written papers, except for the essays in the synoptic paper. Use of English is however taken into account as follows:

- the spelling of technical terms must be sufficiently correct for the answer to be unambiguous
  e.g. for amylase, 'ammalase' is acceptable whereas 'amylose' is not
  e.g. for glycogen, 'glicojen' is acceptable whereas 'glucagen' is not
  e.g. for ileum, 'illeum' is acceptable whereas 'ilium' is not
  e.g. for mitosis, 'mytosis' is acceptable whereas 'meitosis' is not

- candidates must make their meaning clear to the examiner to gain the mark.

- a correct statement that is contradicted by an incorrect statement in the same part of an answer gains no mark - irrelevant material should be ignored

Question Number	Answer	Mark
1(a)(i)	cross sectional area of fibre / eq ;	(1)

Question Number	Answer	Mark
1(a)(ii)	force to break fibre / tensile strength / eq ;	(1)

Question Number	Answer	Mark
1(a)(iii)	1. length of fibre ; 2. suitable measuring device so all the same ; 3. cross-sectional area / diameter / radius / thickness of fibre ; 4. select after measuring with micrometer / eq; 5. humidity ; 6. chamber with suitable solution, which could just be water, to keep them all the same ; 7. temperature ; 8. {chamber / water bath} kept at {stated / fixed} temperature ; 9. soaking time ; 10. use of stopclock for {stated / same} time ; 11. nature of fibre / eq ; 12. same {species / plant / location in plant/ age / eq ;	(4)

Question Number	Answer	Mark
1(b)(i)	A axes correct (x – sodium hydroxide, y - mean tensile strength) ; L axes correctly labeled, and with units (MPa and %) ; P correct plotting ; S line joining points accurately ruled ;	(4)

Question Number	Answer	Mark
1(b)(ii)	1. increase in tensile strength with increase in [NaOH] / eq ; 2. reaches a maximum at 0.16% NaOH / rises until [NaOH] reaches 0.16% / falls after 0.16% / eq ; 3. greatest increase between {0.08% / 0.04%} and 0.16 %/ eq ; 4. Correct manipulation of figures to support the points made in MPt 3	(3)

Question Number	Answer	Mark
1(c)(i)	**Similarities** 1. both have {maxima / eq}/ both show increase of (tensile strength) to 0.16% NaOH / eq ; **Differences** 2. increase steeper for sisal / ([NaOH]) causing maxima (hemp at 0.24 %, sisal 0.16) / size of maxima (hemp 1074 MPa, sisal 820 MPa) / at any [NaOH] hemp greater (tensile strength) than sisal/eq ;	(2)

Question Number	Answer	Mark
1 (c)(ii)	1. reliability is {not good / poor / eq} because SDs are {high / eq} ; 2. manipulation of SD figures to support MPt 1 ; 3. the size of standard deviation shows a lot of variability / idea that different sized SDs exist and indicate different levels of reliability / eq ; 4. there are thirty replicates thus {good / eq} estimate of the reliability / eq ; 5. reference to possible overlap / reference to no overlap; 6. reference to confidence that there is an effect (where no overlap of SDs) / no {significant / eq} effect (where there is overlap) / eq;	**Max 2 for mark points 1-4** (3)

Question Number	Answer	Mark
1(c)(iii)	1. hemp ; 2. (hemp) has higher maximum (tensile) strength / eq ; 3. use of figures (e.g. hemp maximum 1074-820 (= 254 MPa) greater OR hemp 1074/820 = 1.3 times as strong at maximum ;	(2)

Question Number	Answer	Mark
2(a)	1. white blood cells abnormal / eq ; 2. increase risk of infection / disease / eq ; 3. cancer spreads affecting other {organs / processes} / eq ; 4. reduce number of platelets in the body / eq ; 5. reduce blood clotting / eq ; 6. reduce red blood cells / eq ; 7. causes anaemia / eq ; 8. comment on economic effect ; 9. comment on social effects (e.g. specific effects children) ;	(3)

Question Number	Answer	Mark
2(b)(i)	1. reference to 1950-{1990-2000} and (relative) survival rate / eq ; 2. reference to ALL and AML ;	(2)

Question Number	Answer	Mark
2(b)(ii)	1. after line 51-54 ; 2. this is where rates of survival are mentioned ;	(2)

Question Number	Answer	Mark
2(c)	Any **two** pairs of marks Allow any correct implication and line number and a second mark for an appropriate explanation. 1. economic, e.g. anywhere in lines 24-33 ; 2. lack of remuneration to source countries for products like periwinkle / eq ; 3. environmental, e.g. lines 3-5 ; 4. loss of rainforest and thus useful species / eq ; 5. OR, e.g. lines 32-34; 6. loss of global biodiversity ; 7. ethical/social e.g. anywhere in lines 24-33 ; 8. as economic but written in terms of the ethical or social implications of using species from regions without remuneration / eq ; 9. social, e.g. lines 62-63 ; 10. {cure / treatments} for childhood disease / eq ; 11. OR, e.g. lines 52-54 ; 12. Survival rates rising ;	(4)

Question Number	Answer	Mark
2(d)(i)	1. all survival rates have gone up ; 2. credit <u>manipulated</u> use of data ; 3. comment on {this assumes that this trend will continue / may not continue / reach a maximum} ;	(3)

Question Number	Answer	Mark
2(d)(ii)	1. present as a bar graph, with axes disease type and survival rate ; 2. {two bar graphs / paired bars} for 1950 and 2010 / bars for each disease for each year ;	(2)

Question Number	Answer	Mark
2(e)(i)	1. dates / times websites accessed ; 2. specific detail of website {e.g. hyperlinks to websites / url / eq / author} / eq ; 3. reference to addition of suitable non-web resource ;	(2)

Question Number	Answer	Mark
2(e)(ii)	1. quotes relevant content of stated line number ; 2. gives reason for or nature of reference needed ;	(2)

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