

Mark Scheme (FINAL)

Summer 2008

GCE

GCE Biology (6103/03)

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.

PRE-STANDARDISATION MARK SCHEME - UNIT 3 (6103/03) AS Biology / Biology (Human) June 2008

STRICTLY CONFIDENTIAL

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- (1) You must have provisionally marked 15 of every item **ONLINE** before the Standardisation Meeting on **13/06/2008** in order to familiarise yourself with the Pre-standardisation mark scheme.
- (2) At the meeting the mark scheme will be discussed and amplified. It will be amended in the light of the discussion and of marking experience. Assistant Examiners will then be asked to take part in an Agreement Trial. The marks will be compared and discussed. Scripts used in Agreement Trials may be taken away from the meeting for reference purposes; these must be **destroyed** at the conclusion of marking.
- (3) Within **48 hours** of the Standardisation meeting, Assistant Examiners must mark fully, **ONLINE**, a sample of **10** of every item in the light of the amended **FINAL** mark scheme which you will be able to access **ONLINE**. Please note that you will not be able to mark any more responses until after you have received clearance from your Team Leader, and any differences are resolved.
- (4) Once clearance has been received from the Team Leader, you **MUST** start marking and all your marking **MUST** be done by **contract completion date on your contract**.
- (5) Further checks on your marking will be made by your Team Leader at any point throughout the marking period to ensure that your marking is accurate.

Please contact the ePEN helpdesk for technical queries:

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Question Number	Answer	Mark
1(a)	<p>1. reference to difference in energy source /eq ;</p> <p>2. reference to source of organic matter /eq ;</p> <p>Comment mp 1: e.g. autotrophs use (sun)light energy, heterotrophs use energy from other organisms IGNORE references to feeding</p> <p>mp 2: e.g. autotrophs synthesis their own organic compounds, heterotrophs get them from other organisms ACCEPT references to food</p>	(2)

Question Number	Answer	Mark
1(b)	<p>i. holozoic /eq ;</p> <p>ii. mutualistic / symbiotic / eq ; NOT commensal</p> <p>iii. parasitic /eq ;</p> <p>iv. saprobiontic / saprophytic / eq ;</p> <p>Comment i. ACCEPT predator / carnivore</p> <p>IGNORE heterotrophic / reference to consumers</p>	(4)

Question Number	Answer	Mark
2(a)	<p>nutrient enrichment of water / eq;</p> <p>Comment must be an aquatic habitat / water</p> <p>'nutrient enrichment' could be fertilisers / extra nutrients / extra named nutrient e.g. nitrate / nitrogen / phosphate</p> <p>'enrichment' could be extra / more / excess</p> <p>IGNORE references to sewage / manure</p>	(1)

Question Number	Answer	Mark
2(b)(i)	<p>1. $6200/800 \times 100$;</p> <p style="text-align: center;">OR $[(7000 - 800) \div 800] \times 100$</p> <p>2. 775(%) ;</p> <p>ACCEPT other appropriate methods ALLOW correct answer written anywhere</p>	(2)

Question Number	Answer	Mark
2(b)(ii)	<p>(1971 to 1975 / increase)</p> <ol style="list-style-type: none"> 1. (treatment / nitrate) {provided / used} for {protein / amino acid} synthesis ; 2. so increased growth /eq ; <p>(1975 to 1976 / decrease)</p> <ol style="list-style-type: none"> 3. growth of algae {limited / eq} by the supply of nutrients ; 4. (algae) started to die ; 5. animals eating them ; 6. another factor became limiting e.g. competition for light / shading effects ; <p>Comment mp 2: ACCEPT faster / rapidly ref. to plants as equivalent to algal biomass IGNORE references to algal bloom</p> <p>mp 6: ACCEPT competition for another named resource</p> <p>NB If no reference to 1971 - 1975 / increase part of graph then maximum 3 marks.</p>	<p>max (4)</p>

Question Number	Answer	Mark
2(c)	<ol style="list-style-type: none"> 1. more algae would mean more food for {primary consumer / herbivores / eq} ; 2. (primary consumers) would increase in number / eq ; 3. reference to effect on organisms further up the food chain ; 4. reference to algae shading out other plants / algae release toxins which kill {animals / organisms / eq} ; 5. {bacteria / decomposers} {increase in number / eq} ; 6. (bacteria) would {use up oxygen in the water / increase the BOD / eq} ; 7. reference to the change in oxygen affects {aerobic / anaerobic} organism e.g. fish die / bloodworms increase ; <p>Comment mp 7: e.g. less oxygen so fish die / less oxygen so more blood worms / less oxygen so fewer aerobic organisms / less oxygen so only bloodworms survive.</p>	<p>max (3)</p>

Question Number	Answer	Mark
2(d)(i)	<ol style="list-style-type: none"> 1. idea of collecting pondweed growing in {stated / known} {volume / area} of water ; 2. separate weed from water / dry the weed ; 3. find the {mass / weight} of weed / eq ; 4. reference to repeats / more than one sample taken ; 5. (estimate) the {volume / area} of the pond / eq ; 6. idea of how the total biomass of pond calculated ; 	max (4)

Question Number	Answer	Mark
2(d)(ii)	<ol style="list-style-type: none"> 1. biomass takes into account the {mass / size / eq} of organisms / numbers take no account of {mass / size} of organisms / eq ; 2. (therefore) possible to compare with other biomass values / (valid) comparisons not possible with numbers / eq ; 	(2)

Question Number	Answer	Mark
3(a)	<p>A photosynthesis ;</p> <p>B respiration / decomposition / putrefaction ; NOT decay</p> <p>C combustion ;</p>	(3)

Question Number	Answer	Mark
3(b)	<ol style="list-style-type: none"> 1. overall trend {increasing / eq} ; 2. {steady / linear / eq} increase to {1973 / 1974} ; 3. period of {increase and decrease / fluctuation } between {1973 / 1974} and {1982 / 1983 / 1984 / 1985} ; 4. decrease between 1979 and 1983 ; 5. increase from 1983 (with some fluctuations) ; 6. correct manipulation of data e.g. overall 58×10^6 barrels per day ; <p>Comment mp 1: ACCEPT going up mp 2: IGNORE rapid / steep mp 6: rate of 2.8×10^6 barrels per day y^{-1} 1960 to 1973</p>	max (3)

Question Number	Answer	Mark
3(c)	<p>YES, because -</p> <ol style="list-style-type: none"> 1. there is an overall increasing trend in both graphs / eq ; 2. there are fluctuations on both graphs / eq ; <p>NO, because -</p> <ol style="list-style-type: none"> 3. the {peaks and troughs / fluctuations} of the graphs do not match / eq ; <p>Comment ALLOW implications of yes and no</p> <p>"because both show an increase, but the fluctuations do not match" gains two marks</p>	max (2)

Question Number	Answer	Mark
3(d)	<ol style="list-style-type: none"> 1. {traps / eq} {heat / infrared / eq} (in the atmosphere) / eq ; 2. methane / CFC / nitrous oxide / water vapour / eq ; <p>Comment mp 1: ACCEPT reflect / absorb</p> <p>mp 2: NOT 'water' alone if list given, any incorrect answer in list negates mark</p>	(2)

Question Number	Answer	Mark
3(e)	<p>natural gas / coal / lignite / anthracite ;</p> <p>Comment ACCEPT methane / coke / peat / oil shale / brown coal</p>	(1)

Question Number	Answer	Mark
3(f)	<ol style="list-style-type: none"> 1. idea of meeting present needs ; 2. idea of ensuring future supplies / last a long time / eq ; 3. (energy crops) are a renewable resource / eq ; <p>Comment mp 3: e.g. they can be grown at the same rate as they are used</p>	max (2)

Question Number	Answer	Mark
3(g)	<ol style="list-style-type: none"> 1. none of the habitats supported all three species ; 2. planting willow {removes / eq} lapwing / eq ; 3. planting willow increases the numbers of snipe /eq ; 4. planting willow allows woodcock to appear / eq ; 5. credit any correct manipulation of data ; 	max (3)