

GCE

Biology

Unit **F212**: Molecules, Biodiversity, Food and Health

Advanced Subsidiary GCE

Mark Scheme for June 2015

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.













All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

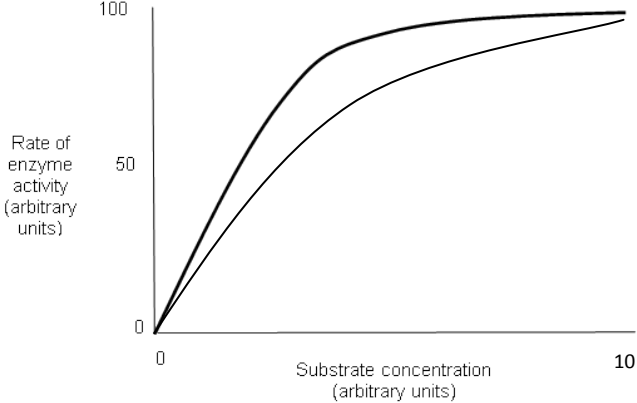
Annotation	Meaning of annotation
	Correct answer
	Incorrect response
	Benefit of Doubt
	Not Benefit of Doubt
	Error Carried Forward
	Given mark
	Underline (for ambiguous/contradictory wording)
	Omission mark
	Ignore
	Partial correct response
	Partial QWC* mark awarded
	Blank page

Here are the subject specific instructions for this question paper

- Use **CON** when a correct response is associated with a piece of clearly incorrect science within the same statement and award no mark.
- For questions in which the command word is 'suggest' ignore incorrect responses and credit a correct response wherever it occurs
- Accept phonetic spellings unless otherwise indicated
- All marks are stand-alone unless otherwise stated in Additional Guidance
- For 'idea of' marking points a wide range of wording is acceptable. The mark is to be awarded for the idea.

Here is the mark scheme for this question paper.

Question			Expected Answers	Mark	Additional Guidance
1	(a)	(i)	peptide (bond / link) ;	1	DO NOT CREDIT dipeptide
1	(a)	(ii)	hydrolysis ; water / H ₂ O , is , added / used / needed ;	2	IGNORE name of bond CREDIT OH and H put back on amino acids ACCEPT (broken down) with water
1	(b)		1 substrate / protein , <u>shape</u> is (nearly) <u>complementary</u> to <u>active site</u> ; ora 2 substrate / protein , enters / fits into , <u>active site</u> (on enzyme) ; 3 induced fit / description of induced fit ; 4 (forms) enzyme-substrate complex / ESC ; 5 destabilising / straining / AW , of <u>bonds</u> (in substrate) ; then (forms) enzyme-product complex ; 6 product(s) / amino acids , leave (active site) ;	5 max	1 ACCEPT complimentary 1 "substrate binds to the active site which is complementary to the substrate shape" = 2 marks, mp1 and mp2 2 ACCEPT binds to / holds / bonds to 2 IGNORE collides 5 IGNORE breaks 6 IGNORE EPC
1	(c)	(i)	no units for , 2 nd column / egg white ; amount (rather than volume / in 4 th column) ; incorrect unit / m , in final / time , column ;	3	IGNORE prompt, and mark the first three answers. IGNORE subsequent answers. CREDIT marks clearly annotated on table ACCEPT volume of egg white needs cm ³ ACCEPT 'they should have written volume' ACCEPT should have been s IGNORE should have been , sec / secs / seconds

Question			Expected Answers	Mark	Additional Guidance
1	(c)	(ii)	equal <u>volume</u> in each tube ; add buffer / control pH ;	1	ACCEPT "make sure the tubes have the same cm ³ "
1	(c)	(iii)	<u>control</u> ;	1	DO NOT CREDIT control variable
1	(c)	(iv)	improve reliability ; assess, variability / spread of results ; allows calculation of <u>mean</u> ;	2	IGNORE accurate ACCEPT identify , anomalous results / outliers IGNORE eliminate anomalous results ACCEPT reference to statistical test ACCEPT standard deviation / t-test / Mann-Whitney CREDIT improves accuracy of mean
1	(d)	(i)	line drawn below line on graph ; line from origin that does not peak or plateau ;	2	If the line goes above the original line at any point = 0 marks ALLOW lines touching at right hand end DO NOT CREDIT line with increasing gradient ALLOW plateau if it joins the original line ALLOW plateau below original line if it starts 4 small squares (or fewer) from the end  <p style="text-align: right;">= 2 marks</p>

Question			Expected Answers	Mark	Additional Guidance
1	(d)	(ii)	similar <u>shape</u> to , substrate / (part of) albumin / protein ; <u>complementary</u> (shape) to (part of) <u>active site</u> ;	2	IGNORE same ACCEPT same shape as part of substrate IGNORE structure ACCEPT tertiary structure
Total				[19]	

Question			Expected Answers	Mark	Additional Guidance
2	(a)	(i)	<u>lives</u> , in / on , <u>host</u> ; gains nutrition / feeds , from (host) ; at the expense of / harms (host) ;	3	The word 'host' must appear at least once in order to gain 3 marks IGNORE lives off host IGNORE binds to host ACCEPT e.g. feeds on blood / get food from it / obtains nutrients from the larger organism DO NOT CREDIT sometimes harm ACCEPT causes disease
2	(a)	(ii)	mosquito / vector / <i>Anopheles</i> , feeds on blood ; breaks <u>skin</u> / <u>skin</u> cannot act as barrier / mosquito pierces <u>skin</u> / mosquito bites <u>skin</u> ;	2	IGNORE insect IGNORE anticoagulant prevents clot formation (as primary defence has already been breached)

Question			Expected Answers	Mark	Additional Guidance
2	(a)	(iii)	<p>suitable / AW , climate / temperature , for , mosquito / vector / <i>Anopheles</i> ; ora</p> <p><u>more</u> mosquitoes live there / AW ; ora</p> <p><i>idea of</i> relatively poor so methods of prevention less effective ;</p>	1	<p>ACCEPT 'warm enough for mosquitoes'</p> <p>IGNORE tropical as AW for 'warm'</p> <p>IGNORE mosquito is adapted to survive there</p> <p>ACCEPT e.g. can't afford , drugs / mosquito nets / habitat management / insecticides</p> <p>ACCEPT lack of education</p>
2	(a)	(iv)	<p>1 climate change / global warming / AW , may result in <u>spread</u> to other parts of the world / AW ;</p> <p>2 <i>idea of</i> <u>increased</u> movement of (infected) people ;</p> <p>3 <i>idea that</i> (non-malaria) countries fund anti-malaria measures via international aid ;</p> <p>4 resistance of , parasite to drugs / mosquito to insecticides ;</p>	2 max	<p>2 ACCEPT increased tourism / easier to travel</p> <p>2 ACCEPT inadvertent transport of mosquitoes</p> <p>4 IGNORE 'resistance' without further qualification</p> <p>4 DO NOT CREDIT immune</p>
2	(b)	(i)	<p>A antigen ;</p> <p>B (extension of) cytoplasm ;</p> <p>C lysosome ;</p> <p>D phagosome / phagocytic vesicle / phago-lysosome ;</p>	4	<p>Mark the first answer. If the answer is correct and another answer is given that is incorrect or contradicts the original answer, then = 0 marks</p> <p>B ACCEPT pseudopod (ia / ium) or close spelling</p> <p>B IGNORE neutrophil</p> <p>C IGNORE lysome / lysozyme</p> <p>D ACCEPT phagocytic vacuole / secondary lysosome</p>

Question			Expected Answers	Mark	Additional Guidance
2	(b)	(ii)	(different) chemicals that attract phagocytes (released from infected erythrocytes) ;	1	ACCEPT in the context of chemicals released by erythrocyte or <i>Plasmodium</i> ACCEPT cytokines / histamine / interleukin , released IGNORE references to antigens on surface
2	(c)		<p><i>Globular</i></p> <p>G1 ball (shaped) / spherical / AW ;</p> <p>G2 hydrophilic , (R-)groups / regions , on outside (of 3-D structure) / hydrophobic (R-)groups on inside ;</p> <p>G3 form H-bonds with water ;</p> <p>G4 soluble ;</p> <p>G5 example of globular protein (other than haemoglobin) ;</p> <p>H1 haemoglobin , carries / transports , oxygen / carbon dioxide ;</p> <p>H2 haemoglobin contains , prosthetic group / haem / Fe²⁺ / iron ion (to allow oxygen to be carried) ;</p> <p>H3 (polypeptide chains within) haemoglobin have tertiary structure (in a ball shape) ;</p>	1	<p>G1 IGNORE round / globular</p> <p>G5 ACCEPT (named) enzyme / hormone / antibody / channel / carrier G5 IGNORE metabolic / transport</p> <p>H1 ACCEPT references to buffering</p> <p>H2 IGNORE Fe³⁺</p> <p>H3 ACCEPT haemoglobin has tertiary structure</p>

		<p>F1 <i>Fibrous</i> linear / long (chain) ;</p> <p>F2 (chains can) form (H) bonds with adjacent , chains (within a molecule) ;</p> <p>F3 insoluble / few hydrophilic groups ;</p> <p>F4 strong / provide strength ;</p> <p>F5 have <u>structural</u> role ;</p> <p>C1 collagen has high proportion of glycine , so chains can lie close together / AW ;</p> <p>C2 collagen forms , crosslinks / covalent bonds , <u>between</u> <u>molecules</u> ;</p> <p>C3 crosslinks / ends of molecules, are staggered to avoid , weak points / AW ;</p> <p>C4 collagen forms part of , tendon / cartilage / ligament / bone / connective tissue / bronchi / bronchioles / trachea / skin ;</p>		<p>F1 ACCEPT straight / rope-like F1 IGNORE strand</p> <p>F2 IGNORE fibre / fibril F2 ACCEPT 'strand' as AW for 'chain' for F2 only F2 ACCEPT crosslink as AW for bond for F2 only F2 DO NOT CREDIT molecule as 'AW' for 'chain' F2 IGNORE attractions / (named) covalent bonds</p> <p>F4 IGNORE flexible / inelastic / withstands pressure</p> <p>C2 ACCEPT (micro / macro) fibrils / fibres , as AW for molecules</p> <p>C3 ACCEPT (micro / macro) fibrils / fibres , as AW for molecules</p> <p>C4 IGNORE blood vessel / artery / vein , wall C4 IGNORE lips</p>
			7 max	
		QWC – use of haemoglobin and collagen as examples	1	AWARD if any H mark and any C mark are awarded
		Total	[21]	

Question		Expected Answers	Mark	Additional Guidance
3	(a)	spread over wider area / more widespread / bigger range / AW ;	1	ACCEPT geographical description, e.g. 'they now live in the South / Wales <u>also</u> ' but answer must imply that they still live in previously occupied areas IGNORE <i>idea of</i> higher numbers IGNORE bigger / more without further qualification
3	(b)	(i) impossible / difficult , to count every individual ; sample provides an <u>estimate</u> ; sample <u>representative</u> (of whole area) ;	2 max	ACCEPT <i>idea that</i> counting every individual is too time consuming
3	(b)	(ii) to compare (the two areas) ; (presence or absence of) roe deer is independent variable ; <i>idea of</i> controlling variables other than roe deer ;	1 max	ACCEPT one area acts as a control ACCEPT to see the effect of the roe deer
3	(b)	(iii) 1 (species) richness is number of <u>species</u> (in a habitat) ; 2 (species) evenness is , abundance / number of <u>individuals</u> of , each / every / all , species (in a habitat) ; 3 <i>idea that</i> both (richness and evenness) are needed to reveal dominance ; 4 <i>idea that</i> high biodiversity associated with high species richness and high species evenness ;	3 max	IGNORE amount ACCEPT 'how many' as AW for 'number' ACCEPT evenness is relative , numbers / abundance , of (each) species IGNORE number of individuals of , a / the / one , species

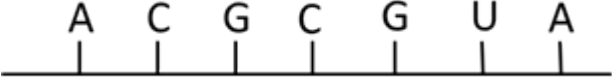
Question			Expected Answers	Mark	Additional Guidance
3	(b)	(iv)	<p>plants are , the basis / AW , of (all) food chains ;</p> <p>shrubs / plants , are food for , insects / animals , that birds eat ;</p> <p><i>idea that</i> shrubs might provide , nesting sites / cover / protection / habitat ;</p>	1 max	<p>IGNORE birds eat , shrubs / seeds / fruit</p> <p>IGNORE 'fewer insects' without reason for fewer insects</p> <p>AWARD in the context of birds, or animals that birds eat</p> <p>IGNORE home</p>
	(b)	(v)	<p>(habitat) dominated by, one / few / AW, species ;</p> <p>ecosystem / habitat , is , unstable / less likely to cope with change ;</p>	2	<p>ACCEPT high number of one species</p> <p>IGNORE area / environment</p> <p>ACCEPT in the context of an example of environmental change</p> <p>ACCEPT a change in one species with have a large effect on the , ecosystem / habitat / food chain</p>
3	(c)	(i)	<p><i>idea of danger</i> to , humans / local wildlife / domestic animals / deer ;</p> <p>environment may no longer be suitable for lynx / AW ;</p>	1	<p>ACCEPT <i>idea of danger</i> to existing food chains</p> <p>IGNORE could become a pest</p> <p>IGNORE dangerous without further qualification</p> <p>IGNORE competition</p>

Question			Expected Answers	Mark	Additional Guidance
3	(c)	(ii)	<p>1 (phylogeny is) the evolutionary , relationship between / history of , organisms / species ;</p> <p>2 phylogeny is the <u>basis</u> of classification ;</p> <p>3 example of molecular evidence used to classify ;</p> <p>4 species / organisms , within the same group have shared , phylogeny / evolutionary history / common ancestor ; ora</p> <p>5 <i>idea that</i> phylogeny of <i>L. lynx</i> and <i>L. pardinus</i> are sufficiently , different to have been placed in separate <u>species</u> / similar to have been placed in same <u>genus</u> ;</p>	4 max	<p>1 ACCEPT reasonable description of evolutionary , history / relationship, e.g. changes in ancestral organisms</p> <p>2 Must be a clear statement</p> <p>3 ACCEPT base sequence / amino acid sequence / DNA / cytochrome C / haemoglobin / ATPase (used to classify)</p>
3	(c)	(iii)	<p>modern / new / better , technology (to distinguish between closely related species) ;</p> <p>more , molecular / biochemical / DNA / genetic , evidence ;</p>	1	ACCEPT named example, e.g. DNA sequencing

Question			Expected Answers	Mark	Additional Guidance
3	(c)	(iv)	<p>1 <i>idea of impact on food chain(s) ;</i></p> <p>2 <i>idea of right to exist / duty of humans to care for other species / ethical reason / preserving species for future generations ;</i></p> <p>3 <i>idea of aesthetic reason ;</i></p> <p>4 <i>economic reason / tourism / might provide useful resource ;</i></p>	3max	<p>1 ACCEPT controlling deer population</p> <p>1 ACCEPT top carnivore / top predator / keystone species / it might compete with existing species</p> <p>1 IGNORE other species might die</p> <p>2 IGNORE 'playing God'</p> <p>2 IGNORE refs to poaching / hunting</p> <p>3 ACCEPT beautiful creatures / nice to look at / AW</p>
Total				[19]	

Question			Expected Answers	Mark	Additional Guidance
4	(a)		<p>0.096 ; ;</p> <p>tonnes ha⁻¹ y⁻¹ ;</p>	3	<p>If answer is incorrect CREDIT one mark for correctly identifying a difference of 4.3 (tonnes ha⁻¹)</p> <p>ACCEPT tonnes per hectare per , year</p> <p>ACCEPT tonnes ha⁻¹/yr</p> <p>ACCEPT tonnes ha⁻¹ per year</p> <p>IGNORE annum</p>

Question		Expected Answers	Mark	Additional Guidance
4	(b)	<p>1 crossbreed / breed / interbreed , high-yielding , wheat plants / individuals ;</p> <p>2 assess / test / measure , yield / AW ;</p> <p>3 crossbreed / AW , selected / best / high-yielding , offspring ;</p> <p>4 over generations ;</p> <p>5 marker assisted selection / prevent self-pollination / genetic screening / prevent unwanted (cross) pollination ;</p>	4 max	<p>1 ACCEPT breed high-yielding individuals</p> <p>1 ACCEPT 'mate / reproduce' as AW for 'breed'</p> <p>1 IGNORE inbreed</p> <p>1 ACCEPT description of high-yielding plant, e.g. more , ears / grain / seed / wheat</p> <p>1 ACCEPT if only one of the plants is high-yielding</p> <p>2 IGNORE select the best offspring</p> <p>4 ACCEPT several / a few generations</p> <p>4 IGNORE time</p> <p>5 ACCEPT descriptions</p> <p>5 IGNORE the ones with the correct gene</p> <p>5 ACCEPT prevent self-fertilization</p>
4	(c)	<p>(use of) fertiliser ;</p> <p>(use of) pesticide / fungicide / insecticide ;</p> <p>improved technology ;</p>	2 max	<p>IGNORE prompt lines and mark as prose</p> <p>IGNORE refs to climate change</p> <p>IGNORE crop rotation</p> <p>IGNORE increase in soil minerals</p> <p>IGNORE irrigation</p> <p>ACCEPT selective herbicide</p> <p>IGNORE decrease in pests</p> <p>ACCEPT e.g. better harvesting technology</p> <p>IGNORE genetic modification / irrigation</p>
Total			[9]	

Question			Expected Answers	Mark	Additional Guidance																		
5	(a)	(i)	<u>thymine</u> ;	1																			
5	(a)	(ii)	correct complementary sequence ; bases joined by a backbone drawn below the letters ;	2	IGNORE bonds between bases  = 2 marks																		
5	(b)		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;">Statement</th> <th style="width: 20%;">Incorrect statements</th> </tr> </thead> <tbody> <tr> <td>The DNA molecule unwinds</td> <td></td> </tr> <tr> <td>Hydrogen bonds between the base pairs break</td> <td></td> </tr> <tr> <td>Free RNA nucleotides join to bases on the exposed DNA strands</td> <td style="text-align: center;">X ;</td> </tr> <tr> <td>Both polypeptide strands act as a template</td> <td style="text-align: center;">X ;</td> </tr> <tr> <td>Hydrogen bonds form between complementary bases</td> <td></td> </tr> <tr> <td>3 hydrogen bonds form between bases A and T</td> <td style="text-align: center;">X ;</td> </tr> <tr> <td>DNA polymerase links the new nucleotides</td> <td></td> </tr> <tr> <td>Covalent bonds form between the phosphate of one nucleotide and the pentose sugar of the next nucleotide</td> <td></td> </tr> </tbody> </table>	Statement	Incorrect statements	The DNA molecule unwinds		Hydrogen bonds between the base pairs break		Free RNA nucleotides join to bases on the exposed DNA strands	X ;	Both polypeptide strands act as a template	X ;	Hydrogen bonds form between complementary bases		3 hydrogen bonds form between bases A and T	X ;	DNA polymerase links the new nucleotides		Covalent bonds form between the phosphate of one nucleotide and the pentose sugar of the next nucleotide		3	Four 'X's – max 2 Five 'X's – max 1 Six or more 'X's – DO NOT CREDIT any marks If candidate does not use 'X', ACCEPT unambiguous system of indicating correct answers.
Statement	Incorrect statements																						
The DNA molecule unwinds																							
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Question			Expected Answers	Mark	Additional Guidance																		

Question		Expected Answers	Mark	Additional Guidance
5	(c)	<p>1 individuals / organisms / species / phenotypes ;</p> <p>2 genetic ;</p> <p>3 environment ;</p> <p>4 <u>intra</u>specific ;</p> <p>5 selection / survival ;</p>	5	<p>Mark the first answer. If the answer is correct and another answer is given that is incorrect or contradicts the original answer, then = 0 marks</p> <p>IGNORE offspring</p> <p>ACCEPT inherited / genetical</p> <p>IGNORE named example of environment, e.g. diet</p> <p>ACCEPT intraspecies</p> <p>ACCEPT breeding / reproduction</p> <p>ACCEPT natural selection / survival of the fittest</p>
		Total	[11]	

Question		Expected Answers	Mark	Additional Guidance
6	(a)	<p>1 2 light chains and 2 heavy chains / 4 <u>polypeptide chains</u> ;</p> <p>2 variable region allows , <u>binding</u> / <u>attachment</u> , to <u>antigen</u> ;</p> <p>3 two variable regions allow binding of <u>more than one</u> (of the same) <u>antigen</u> ;</p> <p>4 variable region on different antibodies allows <u>specificity</u> to <u>different antigens</u> ;</p> <p>5 <u>constant</u> region allows , recognition by / attachment to / binding to , (named) phagocytes ;</p> <p>6 hinge (region) allows flexibility ;</p> <p>7 disulfide , bonds / bridges , hold , polypeptides / light and heavy chains , together ;</p>	6 max	<p>CREDIT marking points from a suitably annotated correctly labelled diagrams but read text first</p> <p>1 IGNORE long / short 1 CREDIT implication from labelled diagram</p> <p>2 IGNORE complementary 2 ALLOW AW for region</p> <p>3 ALLOW AW for region</p> <p>4 ALLOW AW for region</p> <p>5 ALLOW AW for region 5 IGNORE complementary</p> <p>6 ACCEPT allows arms to , move / bend</p>
		QWC – statements linking structure and function for variable region and one other region	1	AWARD if one mark from 2 to 4 and one mark from 5 to 7 are given

Question		Expected Answers	Mark	Additional Guidance
6	(b)	<p><i>neutralisation</i></p> <p>N1 cover / block , binding site / antigen / receptor site (on pathogen) ;</p> <p>N2 bind to toxins ;</p> <p>N3 prevent , binding / entry , to (host) cell ;</p> <p><i>agglutination</i></p> <p>A1 clump / bind together , (many) pathogens ;</p> <p>A2 (clump) too large to , enter (host) cell / cross membranes ;</p> <p>A3 increase likelihood of being consumed by (named) phagocyte / more can be consumed by phagocyte at once ;</p>	4	<p>If neutralisation is correctly described but labelled agglutination, DO NOT CREDIT the first mark but apply ECF thereafter</p> <p>IGNORE references to parts of antibody, e.g. variable / constant</p> <p>N1 IGNORE binds</p> <p>N3 IGNORE prevent pathogen reproduction</p> <p>N3 IGNORE 'harm / infect , host cell'</p> <p>If neutralisation is correctly described but labelled agglutination, DO NOT CREDIT the first mark but apply ECF thereafter</p> <p>A2 IGNORE move</p> <p>A3 IGNORE 'white blood cell'</p> <p>A3 DO NOT CREDIT lymphocyte</p> <p>A3 ACCEPT eaten by phagocytes more easily</p>
		Total	[11]	

Question			Expected Answers	Mark	Additional Guidance																												
7	(a)	(i)	<table border="1"> <thead> <tr> <th>Statement</th> <th>tri-glyceride</th> <th>phospho-lipid</th> <th>cholest erol</th> </tr> </thead> <tbody> <tr> <td>contains only the elements carbon, hydrogen and oxygen</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>insoluble in water</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>contains glycerol</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>contains ester bonds</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>important in membrane structure</td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>contains fatty acids</td> <td>✓</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Statement	tri-glyceride	phospho-lipid	cholest erol	contains only the elements carbon, hydrogen and oxygen	✓		✓	insoluble in water	✓	✓	✓	contains glycerol	✓	✓		contains ester bonds	✓	✓		important in membrane structure		✓	✓	contains fatty acids	✓	✓		6	<p>AWARD one mark per correct row ACCEPT use of an unambiguous symbol other than a tick (e.g. Y) DO NOT CREDIT if there is any ambiguity in the symbol used</p>
Statement	tri-glyceride	phospho-lipid	cholest erol																														
contains only the elements carbon, hydrogen and oxygen	✓		✓																														
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contains ester bonds	✓	✓																															
important in membrane structure		✓	✓																														
contains fatty acids	✓	✓																															
7	(b)		<p>mix with / add , ethanol / alcohol , and water ;</p> <p>(goes) cloudy ;</p>	2	<p>DO NOT CREDIT reference to any incorrect biochemical test</p> <p>ACCEPT milky / white (emulsion) DO NOT CREDIT precipitate</p>																												
7	(c)		<p>less (overall , lipid / fat) ;</p> <p>less / no , <u>saturated</u> (fat / lipid / fatty acids) ;</p> <p>more <u>unsaturated</u> (fat / lipid / fatty acids) ;</p>	2 max	<p>Cannot be inferred from marking points 2 and 3 ACCEPT no / less , cholesterol ACCEPT meat has more</p> <p>ACCEPT meat has more</p> <p>ACCEPT meat has less</p> <p>“Higher ratio of unsaturated to saturated” = 2 marks (mp 2 and 3)</p>																												
Total				[10]																													

APPENDIX 1 – this contains a generic mark scheme grid

Mark Scheme Conventions

The following conventions appear in the Mark Scheme

- Bracketed words. The words in brackets are there to ‘set the scene’ and indicate the context in which the answer is expected. They do not need to appear. Award the mark as long as the statement in the brackets is not contradicted.
- Solidus /. A solidus indicates alternative ways that a mark might be gained for a given Mark Point.
- Use of the comma in a mark point. This indicates that some information from either side of the comma or commas is needed. It is used in conjunction with the solidus.
- In some cases the Guidance column may indicate examples of wording or terms that are acceptable (ACCEPT) or that should be ignored (IGNORE). In the case of IGNORE read on (or previously) to see if something creditworthy appears later in the response.
- Underlining
 - solid underline. The word or part of word underlined is required but minor mis-spellings are acceptable as long as the word is phonetically the same
 - wavy underline. This indicates that whilst the word underlined is not precisely needed, alternative responses need to be closely related in meaning or be a clear description.
- *idea of*. This is used as a prefix to marking points where there may be a fairly wide range of responses which cover the essence of the required response. This often requires examiner judgement. These often, but not exclusively, appear in questions related to environmental or health issues.

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Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
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