



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme

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GCE

Biology A / Human Biology

Unit BYA9

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Question 1

- (a) (i) Biuret / correct ingredients;
Purple / mauve / lilac / violet / pink colour; **2**
Do not award credit for 'blue'.
- (ii) Run lysine separately;
Identical position on same chromatogram / under same conditions;
OR
Calculate R_f value;
By dividing distance moved by (solute) spot by distance moved
by solvent;
Compare with known value (for lysine) / table / grid; **2 max**
- (b) (i) Breaks down / digests lipid / triglycerides / fat (found in milk);
When milk reaches small intestine / not digesting lipid in mammary
glands / idea of delay;
Unable to digest (fully) on its own; **2 max**
- (ii) Infant only has limited ability to digest proteins;
Can only obtain essential amino acids from diet / cannot synthesise
essential amino acids;
Needed for rapid growth; **2 max**
- (c) (i) Immediate values cannot be predicted (reliably);
Line of best fit can't be drawn / not justified by data; **1 max**
- (ii) Assesses probability;
Of results being due to chance; *allow reverse e.g. references to
causative factor*
Difference significant;
Ref. to accuracy of means / shows correlation; **2 max**
- (d) (i) General description incorporating three phases shown on graph;
Less variation early in the morning / 7 a.m.; **2**
- (ii) Food availability;
Is likely to be seasonal / determined by temperature / rainfall / climate;
Leads to variation in fat stores / subcutaneous fat in mother;
Which is mobilised to produce milk during lactation; **3**
- (a) Terminal OH;
Hydrogens on hydrocarbon chain with no double bonds; **2**
Do not penalise references to C-O bond – ignore.
- (b) Decrease in (percentage of) saturated fats / increase in unsaturated fats;
Move towards healthy eating / less saturated fat / more unsaturated fat; **2**

Total 20 marks

Question 2

- (a) Insulates nerve fibre / axon / does not allow passage of ions / charge;
Ions only pass at non-myelinated points / nodes / action potential
only occurs at node;
Saltatory conduction (is faster) / description of 'jumping'; **2 max**
- (b) Rise / fall in cholesterol concentration in cytoplasm / cell;
Reject references only to plasma concentrations;
Fall / rise in cholesterol receptors (in plasma membrane);
Leads to fall / rise in cholesterol / cholesterol returns to norm; **3**
- (c) (i) Mutation produces receptor with different shape / tertiary structure /
not specific to LDL;
So LDL will not bind to it and be absorbed / removed from the blood; **2**
Do not penalise 'active site'.
- (ii) Endothelium / lining of artery torn / damaged;
Atheroma / plaque / underlying cells come into contact with blood;
Triggers blood clotting mechanism;
OR
Artery narrowed by plaque / atheroma;
May be blocked by clot from elsewhere; **2 max**
- (d) 2517; **1**
Accept 2514 or 2511 if explanation refers to start / and stop codons.
- (b) If recessive would inherit one allele from each parent; *reject 'gene'*
Parents could be heterozygotes / carriers;
Parents / heterozygotes / carriers would not show the condition;
NB points 2 and 3 may appear in one linked sentence.
- (c) 1003.3 / 1003;
Two marks for reason from below:
(As dominant,) both heterozygote and homozygote at risk;
(Heterozygotes 1 in 100 so) 1000 are heterozygous;
(Homozygotes 1 in 30000 so) 3 / 3.3 homozygous; **3 max**

Total 15 marks