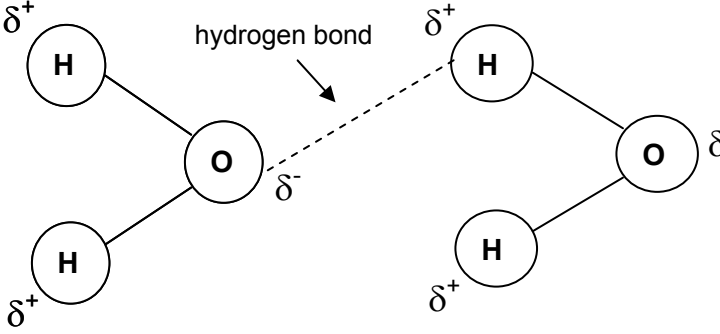


F212 Molecules, Biodiversity, Food and Health

| Question | | Expected Answers | Marks | Additional Guidance |
|----------|-----|---|-------|--|
| 1 | (a) | obese ; iron ; haemoglobin ; | 3 | |
| 1 | (b) | 24.7 ; ; | 2 | If answer incorrect or to the wrong number of dp, then ALLOW one mark for working: $69 \div 1.67^2$ 24.74 = one mark IGNORE 25 and look for working mark If units are given, they must be kg m^{-2} (or kg/m^2) Max 1 for incorrect units |
| 1 | (c) | (i) <u>overweight</u> / borderline <u>overweight</u> ; | 1 | DO NOT CREDIT if more than one answer given |
| 1 | (c) | (ii) 1 very close to border / AW ; 2 graph does not distinguish between male and female ; 3 does not measure actual fat / AW ; 4 has, more / less, muscle / bone (than normal) OR (does not take into account) muscle / bone, mass / density / weight ; 5 muscle / bone, heavier / denser, than fat / AW ; 6 pregnant ; | 2 max | 1 DO NOT CREDIT mistake reading graph 4 Must refer to idea of amount of muscle / bone being different from normal. DO NOT CREDIT muscle / bone unqualified CREDIT has osteoporosis as ref. to different bone density |

| Question | | Expected Answers | Marks | Additional Guidance |
|----------|-----|--|-----------|---|
| 1 | (d) | <p>1 coronary heart disease / CHD / atherosclerosis / angina / coronary thrombosis / myocardial infarction / heart attack / cardiac arrest / cardiovascular disease / stroke ;</p> <p>2 (osteo)arthritis ;</p> <p>3 (Type 2) diabetes ;</p> <p>4 high blood pressure / <u>hypertension</u> ;</p> <p>5 gallstones ;</p> <p>6 cancer ;</p> | 2 max | <p>1 DO NOT CREDIT heart disease alone / arteriosclerosis</p> <p>2 DO NOT CREDIT rheumatoid arthritis</p> <p>3 DO NOT CREDIT Type 1 diabetes</p> <p>6 ACCEPT any type of cancer</p> |
| | | Total | 10 | |

| Question | Expected Answers | Marks | Additional Guidance |
|----------|---|-------|---|
| 2 (a) | <p>1 hydrogen bond represented as, horizontal / vertical, dashed line between O on one molecule and H on the adjacent molecule ;</p> <p>2 hydrogen / H, bond label (on any drawn bond between 2 molecules) ;</p> <p>3 (delta positive) δ^+ on each drawn H <u>and</u> (delta negative) (2) δ^- on each drawn O ;</p> | 3 |  <p>1 DO NOT CREDIT if >1 H bond is drawn between the same two molecules</p> <p>3 if both molecules drawn, δ^+ and δ^- on all atoms. ACCEPT d (lower case) for δ</p> |

| Question | Expected Answers | Marks | Additional Guidance |
|----------|---|-------|---|
| 2 (b) | <p><i>ice floats</i></p> <p>P1 (ice less dense because) molecules spread out ; P2 molecules form, crystal structure / lattice / AW ; P3 ice forms insulating layer / clearly described ; P4 water (below ice), does not freeze / still liquid / remains water / kept at higher temperature ;</p> <p>S1 organisms do not freeze ; S2 animals / organisms, can still, swim / move ; S3 allows, currents / nutrients, to circulate ;</p> <p><i>solubility</i></p> <p>P5 ions / named ion, polar / charged ; P6 ions / named ion, attracted to / bind to / interact with, water;</p> <p>S4 (named) organisms / plants / animals, uptake / AW, minerals / named mineral / nutrients ;</p> <p>S5 correct use of named, mineral / nutrient, in organism ;</p> | | <p>P3 e.g. acts as a barrier to the cold</p> <p>S1 DO NOT ACCEPT die (because 'survival' stated in stem)</p> <p>S4 ACCEPT obtain / enters / goes in / gets</p> <p>S5 needs to be more specific than 'for growth / metabolism' suitable examples include but are not limited to: nitrates for amino acids / protein / (named) nucleic acid / phosphate for ATP / phospholipids / plasma membrane / magnesium for chlorophyll etc</p> |

| | | | | |
|----------|------------|--|---------------------|---|
| | | <p><i>temperature stability</i></p> <p>P7 many / stable, (hydrogen) bonds between molecules ;</p> <p>P8 at lot of energy to, force apart molecules / break bonds ;</p> <p>P9 high (specific) <u>heat capacity</u> ;</p> <p>S6 temperature does not change much / small variation in temperature ;</p> <p>S7 effect of temperature on , enzymes / metabolic rate ;</p> <p>S8 gases remain soluble ;</p> <p>H <i>Award once in any section</i> hydrogen bonds ;</p> | <p>7 max</p> | <p>P7 Many hydrogen bonds between molecules = 2 marks (gets P7 and H)</p> <p>P8 ACCEPT heat as alternative to energy</p> <p>P9 DO NOT CREDIT latent heat capacity</p> <p>S6 could refer to organisms or surrounding water ACCEPT stays cool in summer / stays warm in winter DO NOT CREDIT constant alone</p> <p>S7 ACCEPT any reference to temperature affecting enzyme activity / metabolic rate</p> <p>DO NOT CREDIT if in incorrect context (e.g. they are strong bonds)</p> |
| | | QWC - Award if you see a P mark and an S mark within the same section ; | 1 | Look for the S mark first, then award QWC if there is a P mark in the same section in the mark scheme |
| 2 | (c) | <p>hydrolysis / hydrolytic ;</p> <p>hydrophilic ;</p> | 2 | <p>ACCEPT phonetic spelling throughout</p> <p>IGNORE head</p> |
| | | Total | 13 | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|---|-------|---|
| 3 | (a) | (i) | X ; | 1 | |
| 3 | (a) | (ii) | <p>1 substrate / PABA, and, inhibitor / sulfonamide, similar shape;</p> <p>2 able to, bind / fit into / block, <u>active site</u> ;</p> <p>3 (shape) <u>complimentary</u> to <u>active site</u> ;</p> <p>4 both have, hex / benzene / 6-C, (ring) ;</p> <p>5 both have, NH₂ / amine ;</p> <p>6 correct ref to a difference between sulfonamide and PABA ;</p> | 3 max | <p>1 ACCEPT similar structure DO NOT CREDIT same shape</p> <p>3 DO NOT CREDIT refs to PABA and sulfonamide being complementary to each other or to the enzyme (alone)</p> <p>6 e.g. only sulfonamide contains S sulfonamide has 1 more NH₂ group sulfonamide has SONH₂ but PABA has N₂ only PABA has COOH group</p> |
| 3 | (b) | (i) | <p><i>without inhibitor</i></p> <p>1 more, PABA / substrate, molecules enter <u>active site</u> ;</p> <p>2 more, enzyme substrate complexes / ESCs, formed ;</p> <p>3 at low concentration not all active sites occupied / at high concentration all active sites occupied ;</p> <p>4 achieves / reaches, max (turnover) rate / V_{max} ;</p> <p>5 (at high substrate concentration) enzyme <u>concentration</u> limiting ;</p> | 3 max | <p>1 ACCEPT more successful collisions between substrate and active site</p> <p>3 ACCEPT active sites filled / no free active sites DO NOT CREDIT active sites run out</p> <p>4 ACCEPT 'cannot work any quicker' DO NOT CREDIT 'optimum rate' or 'rate levels off'</p> |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|---|-------|--|
| 3 | (b) | (ii) | <p><i>with inhibitor</i></p> <p>1 inhibitor / sulfonamide, can, fit / block / bind to / compete for, <u>active site</u> ;</p> <p>2 (occupies it) for a short time / temporary / reversibly ;</p> <p>3 fewer active sites available (for substrate) / AW ;</p> <p>4 (idea of) more substrate reduces chance of inhibitor getting in;</p> | 2 max | <p>3 ACCEPT substrate can't access active site</p> <p>4 ACCEPT more ESC formed in context of overcoming inhibition / substrate can out-compete inhibitor</p> |
| 3 | (c) | | <p>1 mutation ;</p> <p>2 sulfonamide is <u>selective</u>, agent / pressure ;</p> <p>3 resistant survive / non resistant die ;</p> <p>4 (resistance) allele / gene / mutation, passed to, offspring / next generation ;</p> <p>5 (happens) over many generations ;</p> <p>6 AVP ;</p> | 4 max | <p>DO NOT CREDIT immune for any mark point</p> <p>3 IGNORE refs to (survivors) breed / reproduce ;</p> <p>5 IGNORE refs to time. Look for generations</p> <p>6 e.g. mutation is, random / spontaneous allele / gene, passed on by, plasmids / horizontal transmission</p> |
| 3 | (d) | (i) | <p><u>bacteria</u>, killed / destroyed / cannot grow / lyse, in presence of antibiotic ;</p> | 1 | <p>DO NOT CREDIT 'antibiotic works better' or 'there are no bacteria there' or 'bacteria are broken down'</p> |
| 3 | (d) | (ii) | streptomycin ; | 1 | IGNORE '4' as it is the number rather than the name |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|-------|--|-----------|--|
| 3 | (d) | (iii) | <p>1 cheap / AW ;</p> <p>2 (test is) quick to carry out / (deals with several antibiotics) at same time / AW ;</p> <p>3 (idea of) allowing early treatment of patient ;</p> <p>4 (idea of) compares antibiotics under same conditions ;</p> <p>5 (correct antibiotic first time) to prevent antibiotic resistance developing ;</p> | 3 max | <p>DO NOT CREDIT responses which simply refer to selecting the best antibiotic</p> <p>2 DO NOT CREDIT speed of antibiotic action</p> |
| 3 | (e) | | <p>(new) drugs come from (named) organisms ;</p> <p>biodiversity is reducing ;</p> <p>habitats / named habitat, destroyed / lost ;</p> <p><u>reason</u> for habitat destruction ;</p> | 2 max | <p>ACCEPT plants / animals / fungi / species / etc.</p> <p>ACCEPT deforestation / natural environment <u>lost</u></p> <p>e.g. global warming logging fuel crops construction / industrialisation mining fishing pollution tourism</p> <p>ACCEPT any other valid reason that will destroy natural habitats but not general statements such as 'human development' or 'business'</p> |
| | | | Total | 20 | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|--|-------|--|
| 4 | (a) | (i) | L ; M ; J ; | 3 | If 2 nd letter given, no mark |
| 4 | (a) | (ii) | <p>1 peptide bond ;</p> <p>2 between, amine / J group (of one amino acid) and carboxyl / L group (of another) ;</p> <p>3 H (from amine group) combines with OH (from carboxyl group) ;</p> <p>4 condensation reaction OR water, lost / eliminated / produced / created / AW ;</p> <p>5 covalent ;</p> | 3 max | <p>CREDIT answers from clearly drawn diagrams with bonds labelled</p> <p>1 ACCEPT peptide link</p> |
| 4 | (b) | | <p>1 some R groups, attract / repel ;</p> <p>2 <u>disulfide</u>, bridges / bond ;</p> <p>3 between, cysteine / SH / S (atoms) ;</p> <p>4 hydrogen / H, bonds ;</p> <p>5 ionic bonds between, oppositely charged / + and -, R groups ;</p> <p>6 hydrophilic R groups, on outside of molecule / in contact with water (molecules) ;</p> <p>7 hydrophobic R groups, on inside of molecule / shielded from water (molecules) ;</p> | 4 max | 4 DO NOT CREDIT in context of secondary structure |

| Question | | | Expected Answers | Marks | Additional Guidance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|-------------------------------|------------------------------|---|-----------|--|----------|--|---|-------------------------------|-----------------------|---|---|-------------------------|--------------------|---|---|-----------------|----------------------------|---|---|---------------------------|------------------------|---|---|----------|---------------------|---|---|-------------|---------|---|---|--------------------------|-----------------------------|---|---|----------------|------------------------------|---|---|----------------|------------------|---|--|--|--|--|-------|---|
| 4 | (c) | (i) | <table border="1"> <thead> <tr> <th></th> <th>glycogen</th> <th>collagen</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>carbohydrate / polysaccharide</td> <td>protein / polypeptide</td> <td>;</td> </tr> <tr> <td>2</td> <td>(alpha) glucose (units)</td> <td>amino acid (units)</td> <td>;</td> </tr> <tr> <td>3</td> <td>identical units</td> <td>different amino acid units</td> <td>;</td> </tr> <tr> <td>4</td> <td>glycosidic, bonds / links</td> <td>peptide, bonds / links</td> <td>;</td> </tr> <tr> <td>5</td> <td>branched</td> <td>unbranched / linear</td> <td>;</td> </tr> <tr> <td>6</td> <td>non-helical</td> <td>helical</td> <td>;</td> </tr> <tr> <td>7</td> <td>one chain (per molecule)</td> <td>three chains (per molecule)</td> <td>;</td> </tr> <tr> <td>8</td> <td>no cross links</td> <td>cross links (between chains)</td> <td>;</td> </tr> <tr> <td>9</td> <td>contains C H O</td> <td>contains C H O N</td> <td>;</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | glycogen | collagen | | 1 | carbohydrate / polysaccharide | protein / polypeptide | ; | 2 | (alpha) glucose (units) | amino acid (units) | ; | 3 | identical units | different amino acid units | ; | 4 | glycosidic, bonds / links | peptide, bonds / links | ; | 5 | branched | unbranched / linear | ; | 6 | non-helical | helical | ; | 7 | one chain (per molecule) | three chains (per molecule) | ; | 8 | no cross links | cross links (between chains) | ; | 9 | contains C H O | contains C H O N | ; | | | | | 3 max | AWARD 1 mark per correct row Comparative statements must be made in a row 2 DO NOT CREDIT beta 5 ALLOW straight 7 DO NOT CREDIT strands 9 IGNORE S (for collagen) |
| | glycogen | collagen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | carbohydrate / polysaccharide | protein / polypeptide | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | (alpha) glucose (units) | amino acid (units) | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | identical units | different amino acid units | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | glycosidic, bonds / links | peptide, bonds / links | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | branched | unbranched / linear | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | non-helical | helical | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | one chain (per molecule) | three chains (per molecule) | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | no cross links | cross links (between chains) | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | contains C H O | contains C H O N | ; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | (c) | (ii) | (high tensile) strength / strong ; does not stretch / is not elastic ; insoluble ; flexible ; | 2 max | Mark the 1 st answer on each numbered line IGNORE fibrous / tough | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | | | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|--|-------|--|
| 5 | (a) | (i) | (diagram shows that some) individuals have more than one risk factor ; | 1 | DO NOT CREDIT CHD is multifactorial |
| 5 | (a) | (ii) | <p>1 high, saturated / animal, fat diet ;</p> <p>2 high salt intake ;</p> <p>3 (diet) low in (named) antioxidants / vitamin A / vitamin C / vitamin E ;</p> <p>4 obesity ;</p> <p>5 genetic / heredity / inherited / ethnicity / race ;</p> <p>6 gender / sex ;</p> <p>7 excess alcohol consumption ;</p> <p>8 (increasing) age ;</p> <p>9 diabetes ;</p> <p>10 stress ;</p> | 2 max | <p>Mark the 1st answer on each numbered line.</p> <p>1 ACCEPT absence of polyunsaturated fats</p> <p>7 must indicate, excess / high levels</p> |

| Question | | | Expected Answers | | | Marks | Additional Guidance |
|----------|-----|-------|--|----------|-----------------|-------|---|
| 5 | (a) | (iii) | effect | nicotine | carbon monoxide | | DO NOT CREDIT hybrid ticks IGNORE crosses in the 'blank' boxes |
| | | | increases heart rate | ✓ | | | |
| | | | constricts arterioles | ✓ | | ; | |
| | | | damages the lining of arteries | | ✓ | ; | |
| | | | reduces the ability of haemoglobin to carry oxygen | | ✓ | ; | |
| | | | makes platelets sticky | ✓ | | ; | |
| | | | | | | 4 | |

| Question | | Expected Answers | Marks | Additional Guidance |
|--------------|-----|--|-----------|---|
| 5 | (b) | <p>1 damage to <u>endothelium</u> ;</p> <p>2 LDLs <u>contain</u>, saturated fat / cholesterol ;</p> <p>3 LDLs collect at site of damage ;</p> <p>4 fatty substances / cholesterol / LDLs, deposited, <u>in</u> artery wall / <u>under</u> endothelium ;</p> | 2 max | <p>2 DO NOT CREDIT moves / transports CREDIT LDLs are <u>protein</u> and saturated fat / cholesterol</p> <p>3 must be stated</p> <p>4 ACCEPT fats / lipids ACCEPT under lining of artery wall DO NOT CREDIT veins / vessels / capillaries</p> |
| 5 | (c) | <p>1 increases size / AW, of <u>lumen</u> ;</p> <p>2 increases / eases / decreases resistance to, blood flow ;</p> <p>3 (therefore) more, O₂ / glucose ;</p> <p>4 for <u>aerobic</u> respiration ;</p> <p>5 in, heart <u>muscle</u> / cardiac <u>muscle</u> / myocardium ;</p> <p>6 more CO₂ removed ;</p> | 4 max | <p>1 ACCEPT reduces blockage in lumen</p> <p>2 ACCEPT 'more blood' / 'blood flows more freely' / 'blood flows as normal' / 'quicker blood flow'</p> <p>3 needs idea of more oxygen (than before operation) CREDIT idea of preventing oxygen starvation</p> <p>'more oxygenated blood' gets mark points 2 and 3</p> |
| Total | | | 13 | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|--|-------|--|
| 6 | (a) | (i) | <u>deoxyribose</u> (sugar) ; phosphate (group) ; (nitrogenous / purine or pyrimidine) base / one correctly named base ; | 3 | DO NOT CREDIT dioxyribose DO NOT CREDIT phosphate head or phosphate backbone DO NOT CREDIT letter instead of named base DO NOT CREDIT uracil DO NOT CREDIT incorrect spelling of thymine with 'a' |
| | | | | | |
| 6 | (a) | (ii) | has ribose ; uracil / U, instead of, thymine / T ; single stranded ; 3 forms / AW ; | 2 max | assume answer refers to RNA unless otherwise stated DO NOT CREDIT incorrect spelling of thymine with 'a' |

| Question | | Expected Answers | | Marks | Additional Guidance |
|----------|---|---|-----------------------|--|---|
| 6 | (b) | 1 | untwist / unwind ; | 6 max | 1 DO NOT CREDIT unravel |
| | | S | 2 unzip / described ; | | 2 DO NOT CREDIT strands separating without qualification |
| S | 3 H bond breaks ; | | | | |
| | 4 both strands act as template ; | | | | |
| N | 5 (aligning of) free (DNA) <u>nucleotides</u> ; | 5 DO NOT CREDIT bases | | | |
| N | 6 <u>complementary</u> , base / nucleotide, pairing ; | 6 & 7 Do not consider for QWC if mark awarded in the context of breaking apart or DNA structure only, rather than forming new double helix | | | |
| N | 7 C to G and T to A / purine to pyrimidine ; | | | | |
| R | 8 hydrogen bonds reform ; | | | | |
| R | 9 sugar-phosphate back bone forms ; | | | | |
| R | 10 (using) covalent / phosphodiester, bond ; | | | | |
| | 11 <u>semi-conservative</u> replication ; | | | | |
| | 12 DNA polymerase ; | 12 CREDIT at any stage in the process | | | |
| | 13 AVP ; | 13 e.g. ligase / helicase / gyrase used in correct context C – G 3 H bonds / T – A 2 H bonds activation of free nucleotides (with 2 phosphates) synthesis in the 5' to 3' direction Okazaki fragments on lagging strand | | | |
| | | QWC - correct sequence – 1 S mark, then 1 N mark, then 1 R mark ; | 1 | It should be clear that candidate realises that the sequence is S, then N then R – even if not written in that order DO NOT CREDIT if any ref to transcription / translation | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|--------------|-----|------|---|-----------|--|
| 6 | (c) | (i) | polypeptide / protein / primary structure / a sequence of amino acids ; | 1 | DO NOT CREDIT 'codes for an amino acid' IGNORE enzyme / named protein |
| 6 | (c) | (ii) | different, sequence of amino acids / primary structure / AW ; different protein / protein folds up differently / different tertiary structure ; (product) no longer functions / different function ; | 2 max | DO NOT CREDIT 'product' or incorrect biochemical (e.g. carbohydrate) ACCEPT suitable example, e.g. active site of enzyme no longer complimentary to substrate |
| Total | | | | 15 | |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|-----|--|-------|---|
| 7 | (a) | | <p><i>habitat</i></p> <p>1 the place where, an organism / organisms / a population / a community, lives ; 1 max</p> <p><i>biodiversity</i></p> <p>2 variety of life / the range of living organisms found / AW ;</p> <p>3 variety / range, of, habitats / ecosystems ;</p> <p>4 <u>number</u> of different <u>species</u> ;</p> <p>5 variety / genetic diversity, within species ; 2 max</p> | 3 max | <p>1 ACCEPT animal or plant ACCEPT location / environment / area DO NOT CREDIT ecosystem</p> <p><i>max 2 for biodiversity</i></p> <p>2 DO NOT CREDIT ref to variation ACCEPT <u>species</u> richness / <u>species</u> diversity</p> <p>4 must have ref to number / how many / etc.</p> |
| 7 | (b) | | <p>not <u>random</u> / should have been <u>random</u> ;</p> <p>unrepresentative / skewed / biased, results ;</p> <p>creates an over-estimate of diversity ;</p> <p>may miss some (dominant) species / does not cover full range of species ;</p> | 2 max | <p>DO NOT CREDIT ref to 'fair test' unless qualified</p> <p>'misleading' is not quite good enough</p> <p>CREDIT plant / animal instead of species</p> |
| 7 | (c) | (i) | <p>remove units from the body of the table and put units in column heading / AW ;</p> | 1 | <p>ALLOW 'measurement' or 'type of measurement' instead of 'unit'</p> <p>DO NOT CREDIT 'units are not necessary in table'</p> |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|-------|--|-------|--|
| 7 | (c) | (ii) | <p>bell shaped ;</p> <p>peak / highest point, for ling between peaks for bracken and cotton grass (on horizontal axis) ;</p> <p>peak / highest point, for ling lower than both bracken and cotton grass (on vertical axis) ;</p> | 3 | <ul style="list-style-type: none"> • must start at 0% cover and after 0m and finish at 0% cover and before 100m • line must cross the line for bracken • allow sharp angle for peak of bell |
| 7 | (c) | (iii) | <p>1 absent at bottom of slope / present at top of slope ;</p> <p>2 amount of bracken / percentage cover, increases with increasing distance ;</p> <p>3 comparative figs. with units ;</p> | 2 max | <p>1 DO NOT CREDIT that bracken is present at top if answer also implies that some bracken is present at the bottom</p> <p>ALLOW 'before 40 - 50m' as AW for 'bottom'</p> <p>ALLOW 'after 40 - 50m' as AW for 'top'</p> <p>ALLOW 'start' instead of 'bottom' and 'finish' or 'end' or 'higher up' instead of 'top'</p> <p>Needs to be stated – cannot be implied from mp 2</p> <p>3 two percentages at two stated distances (must be from table) e.g. 0% at 0m and 74% at 100m or percentage difference between two stated distances</p> <p>ALLOW 'percentage cover' instead of % for units</p> <p>DO NOT CREDIT 0% at the bottom and 74% at the top (as no distance has been quoted)</p> |

| Question | | | Expected Answers | Marks | Additional Guidance |
|----------|-----|------|---|-----------|--|
| 7 | (d) | (i) | <p>record / identify / list / AW, all species / (all) other plants ;</p> <p>(count / estimate) numbers of <u>individuals</u> within each species / AW ;</p> | 2 max | <p>IGNORE observe</p> <p>IGNORE animals <i>for this habitat</i></p> <p>IGNORE 'species richness' and any other calculation</p> <p>ACCEPT the number of plants / species</p> <p>If the formula is given, only credit this mark if 'n' is explained in terms of the number of individuals within the species</p> |
| 7 | (d) | (ii) | <p>not stable / at risk / low ability to withstand change / AW ;</p> <p>more likely to lose species ;</p> | 1 max | <p>IGNORE 'biodiversity is low' as this is given in the question</p> <p>IGNORE 'only a few species' or 'dominated by a few species' as these are descriptions of low biodiversity</p> |
| | | | Total | 14 | |