Question Number	Answer	Additional Guidance	Mark
1(a)(i)	Bulgaria ;		(1)

Question Number	Answer	Additional Guidance	Mark
1(a)(ii)	A (5:8) ;		(1)

Question Number	Answer	Additional Guidance	Mark
1(a)(iii)	1. hig r biodiversity in Slovenia / lower biodiversity in Greece ; 2. rrect manipulation of data to support answer ;	e.g. for Slovenia: AT+TT = 180 more 92.3%, AT = 110 more, TT = 70 more	(2)

Question Number	Answer	Additional Guidance	Mark
1(b)	1. the { role / position / eq } of a { species / organism } ; OR idea of how a { species / organism } exploits resources ; 2. within the { community / ecosystem /habitat } ;	2. ACCE reference to cave habitat IGNORE environment	(2)

Question Number	Answer	Additional Guidance	Mark
1(c)(i)	they are { found only in Slovenia and Croatia / not found in other countries / only found in these caves } ;		(1)

Question Number	Answer	Additional Guidance	Mark
1(c)(ii)	B (slow metabolic rate) ;		(1)

Question Number	Answer	Additional Guidance	Mark
1(c)(iii)	**(QWC – Spelling of technical terms must be correct and the answer must be organised in a logical sequence)** 1. genetic variation in population ; 2. reference to selection pressure ; 3. description of a beneficial characteristic ; 4. idea that these organisms with beneficial characteristics survive and reproduce ; 5. passing on { beneficial alleles / eq } to offspring / eq ; 6. over { generations / time } there is a change in allele frequency ; 7. relevant reference to { geographical/ reproductive } isolation ;	**Emphasis is on clarity of expression** 3. e.g. xternal gills, slow metabolic rate, streamline shape 4. ACCEPT beneficial alleles 5. N genes 7. ACCE allopatric speciation (due to isolation in caves)	(5)

Question Number	Answer	Additional Guidance	Mark
2 (a)	1. idea that the {alveoli / air sacs / lung / tissue } have been {replaced / destroyed / eq} (by the tubercle) ; 2. idea that the (tubercle / destroyed lung tissue) has reduced the (surface) area (of the lung) ; 3. breathing problems due to { gas exchange being reduced / less oxygen in blood / eq } ; 4. idea that the coughing is { due to irritation /to remove the dead tissue / eq} ; 5. blood coughed up is due to damage of (lung) blood vessels / eq ;	**1 IGNORE** blocks **4 ACCEPT** tubercle **5 IGNORE** idea that lung damage causes bleeding	**(4)**

Question Number	Answer	Additional Guidance	Mark
2(b)(i)	1. idea that bacteria are resistant to fewer {antibiotics / antibiotic combinations} (in 2006 than 2007) ; 2. in both years there are resistant strains to {streptomycin / INH + rifampicin + ethambutol / INH } ; 3. idea that there are resistant strains to INH + rifampicin in 2006 but not in 2007 ; 4. idea that there are resistant strains to {ethambutol / rifampicin} in 2007 but not in 2006 ;	**ACCEPT** clear abbreviations to the names of the antibiotics throughout **1 ACCEPT** a description e.g. new resistances, resistant to 4 in 2006 and 5 in 2007 **3 ACCEPT** idea that {resistance decreased to zero / no longer resistant} **4 ACCEPT** idea of resistance developing **NB** development of new resistances to {ethambutol / rifampicin} = Mp 1 and 4	**(3)**

Question Number	Answer	Additional Guidance	Mark
2(b)(ii)	1. bacteria have a mutation in {DNA / gene / eq } ; 2. idea that the {presence / usage of} {antibiotic (INH) / INH} acts as a selection pressure ; 3. idea that the allele (for resistance) is passed on ; 4. idea that bacteria {divide by asexual reproduction / divide by binary fission / produce clones / eq} ; 5. idea of increasing the allele frequency ; 6. idea that the more resistant bacteria there are, the more likely new strains will acquire the (resistance) gene ;	**3 NOT** gene **4 ACCEPT** divide by mitosis / conjugation / transduction / transformation / eq	**(3)**

Question Number	Answer	Additional Guidance	Mark
2(b)(iii)	1. reference to codes of {practice / conduct / eq } ; 2. idea that appropriate {antibiotics / named example} should be given to patients ; 3. idea of {educating patients about taking antibiotics / taking the full course of antibiotics ; 4. credit another appropriate procedure e.g. hand washing, screening ;	**1 ACCEPT** named policy /code **NB** Mp5 is for named practice **2 ACCEPT** not giving antibiotics if not necessary / not using antibiotics for prophylactic treatment / using narrow spectrum antibiotics / rotate antibiotic use	**(2)**

Question Number	Answer	Additional Guidance	Mark
3(a)	1. idea that as the {distance from the front edge of the glacier / time} increases, the {complexity / biodiversity / size / eq } of the organisms increases ; 2. reference to (primary) succession ; 3. idea that {algae / lichens / pioneer species} are (the first) organisms to colonise bare rock / eq; 4. idea that {algae / lichen / pioneer species} improve conditions for plants ; 5. idea of competition (limiting species present) ;	1. ACCEPT idea that climax community only reached at distance from glacier edge 2. OT secondary succession 4. including e.g. change rock into soil / increase humus content of soil / increase water content 5. e.g. newer species outcompete previous species	**(3)**

Question Number	Answer	Additional Guidance	Mark
3(b)(i)	1. the {role / interaction / eq} of an { *Epilobium latifolium* / organism / species} within its { ecosystem / habitat / environment } ; 2. (*Epilobium latifolium*) is a producer ; 3. idea that *Epilobium latifolium* provides {food / energy} for other organisms (herbivores / primary consumers / decomposers) ; 4. idea that *Epilobium latifolium* improves soil e.g. holds soil structure together, increases nutrients ; 5. idea that *Epilobium latifolium* provides {shelter / (micro) habitat} for organisms ;	1. IGNORE community 3. OT prey 4. IGNORE food in soil ACCEPT adds organic matter, humus 5. ACCEPT named organism e.g. insects	**(3)**

Question Number	Answer	Additional Guidance	Mark
3(b)(ii)	1. idea of using a transect (from front edge of glacier); 2. credit method of sampling (along transect) ; 3. credit appropriate method of selecting sample sites (along transect) ; 4. description of estimate of abundance e.g. number of plants, percentage cover 5. idea of using more than one transect ; 6. credit appropriate method of recording quantitative data ;	2. e.g. clumps touching transect, quadrat (on transect), number of plants along perpendicular 3. .g. set distance, regular, systematic, flip-flop quadrats NOT random 5. IGNORE references to repeating investigation 6. .g. tally chart, table, graph	(4)

Question Number	Answer	Additional Guidance	Mark
3(b)(iii)	1. credit appropriate named abiotic factor; 2. credit appropriate method of measurement of factor ; 3. credit appropriate description of where reading should be taken ; 4. idea of taking several readings and getting an average / eq ;	1. e.g. light, soil pH, water content, mineral content, temperature, salinity, wind IGNORE CO_2 , O_2, rainfall, humidity 2.CE applied e.g. light {probe / sensor / meter / data logger}, {water gauge / drying out soil samples} 3. CE applied e.g. reading taken at height of plant, soil sample around roots, quadrat	(3)

Question Number	Answer	Additional Guidance	Mark
4(a)(i)	1. (successful interbreeding) produces offspring; 2. (same species produce) fertile (offspring); 3. credit reason why offspring of different species might be infertile ;	**Accept** converse throughout **Ignore** viable eg genetic incompatibility, different number of chromosomes, poor quality gametes , low number of gametes	**(3)**

Question Number	Answer	Additional Guidance	Mark
4(a)(ii)	1. reference to reproductive isolation ; 2. different breeding times; 3. do not recognise {courtship displays / songs / eq} ; 4. physically incompatible eg genitalia ;		**(3)**
Question Number	**Answer**	**Additional Guidance**	**Mark**
4(b)	1. idea that the two species share the same habitat ; 2. idea that the two species experience the same environmental conditions ; 3. (therefore) the same selection pressures ; 4. idea that they are both well-adapted (to their environment) ; 5. idea that no mutations have happened that {improve / change} their {phenotypes / survival}; 6. {no / few} changes in allele frequency / gene pool is stable ; 7. idea that there has been very little change in environment (over the years) ;	**Accept** similar **NB** this needs to be in the context of both species being subjected to the same selection pressures **Accept** similar	**(3)**