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	Answer	Additional Guidance	Mark

Number			
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)(i)	1. {number / range / variety / eq} of species ; 2. genetic variety within a species / number of different alleles in a {species / gene pool} ;	1. CCEPT amount	**(2)**

Question Number	Answer	Additional Guidance	Mark
2(a)(ii)	idea of (counting) number of species in a known area of rainforest ;	ACCEPT use a quadrat to count species	**(1)**

Question Number	Answer	Additional Guidance	Mark
2(b)(i)	1. idea that loss of biodiversity means fewer species ; 2. idea that the loss of endemic species leads to extinction ; 3. idea that species {lost / not yet discovered / eq} may be useful ;	3. ACCEPT plants lost may be useful	**(2)**

Question Number	Answer	Additional Guidance	Mark
2(b)(ii)	**(QWC - Take into account quality of written communication when awarding the following points)** 1. extract made from seeds (of Jatoba) / eq ; 2. agar plate with bacteria / culture of bacteria grown in nutrient broth / eq ; 3. description of aseptic technique ; 4. idea of extract (of Jatoba) placed on (paper) disc OR in a well cut into the agar OR added to broth ; 5. control described e.g. disc plus solvent only ; 6. incubated at temperature in range 20 to 30°C AND stated time in range 1 to 7 days ; 7. (look for) zone of inhibition / clarity of broth / eq ; 8. replication qualified e.g. { repeat the experiment / repeats to calculate mean } ;	**Clarity of expression** 1. ACCEPT description 2. ACCEPT bacterial lawn 7. ACCEPT clear area around extract 8. IGNORE repeat unqualified	**(5)**

Question Number	Answer	Additional Guidance	Mark
2(b)(iii)	1. idea of testing on animals for toxicity ; 2. idea of testing on healthy volunteers to determine side effects ; 3. idea of finding out how the drug is metabolised ;		**(2)**

Question Number	Answer	Mark
3(a)	B – forensic entomology ;	**(1)**

Question Number	Answer	Mark
3(b)(i)	D – temperature ;	**(1)**

Question Number	Answer	Mark
3(b)(ii)	1. idea that the body has been dead for a while ; 2. (because) more than one species of insect present / eq ; 3. reference to succession (of insect species) ; 4. idea that life cycle {times / stages} of the insects are {known / used / eq} ; 5. idea that life cycle times depend on (environmental) temperature ; 6. credit specific ref to information in table e.g. blowfly cycle complete ;	**(3)**

Question Number	Answer	Mark
3(c)(i)	1. idea that a drop in body temperature is linked to time after death e.g. algor mortis ; 2. idea that factors affect temperature drop e.g. environmental temperature, body size, clothing ; 3. (useful because) time of death can be calculated if (ambient) temperature known / eq ; 4. only useful for short period of time following death e.g. 24 hours, a day ;	**(2)**

Question Number	Answer	Mark
3(c)(ii)	1. idea that body decomposes in a specific sequence (with time) ; 2. idea that factors affect decomposition e.g. environmental temperature, wounds ; 3. (not useful) if all the body has decomposed / eq ;	**(2)**

Number		
4(a)(i)	A ;	**(1)**

Question Number	Answer	Mark
4(a)(ii)	D ;	**(1)**

Question Number	Answer	Mark
4(a)(iii)	A ;	**(1)**

Question Number	Answer	Mark
4(b)	1. ref to thylakoids ; 2. (made of) membranes ; 3. (arranged as) {stacks / grana / eq} ; 4. contain {pigment / chlorophyll} / eq ; 5. (arranged as) quantasomes / photosystems ;	**maximum (3)**

Question Number	Answer	Mark
4(c)(i)	1. (62.4 / 162) x 100 ; [accept alternative correct working] 2. 38.5(%) ; [must be to 1 dp]	**(2)**

Question Number	Answer	Mark
4(c)(ii)	1. ref to different lighting has little effect / little variation in percentage grain yields ; 2. variation in percentage is less than 3 / eq ; 3. which is (probably) {not significant/ insignificant} ; 4. yield is {less / eq} for low pressure sodium lamps ; 5. the best yield is metal halide / eq ;	**maximum (3)**

Question Number	Answer	Mark
4(c)(iii)	Any **two** from 1. crops can be grown {out of season / all year round} / eq ; 2. plants photosynthesise 24 hours a day / eq ; 3. idea of less physical damage from {weather / animals / eq} ; 4. pest control easier / eq ; 5. ref to control of other named factor, eg CO_2, temperature, humidity, water supply ;	**maximum (2)**