

Human Impact on Resources - Mark Scheme

Q1.

Question Number	Acceptable Answer	Additional guidance	Mark
	<p>An answer that makes reference to four of the following:</p> <p>(Safer)</p> <ul style="list-style-type: none"> • because pure drug used rather than extract (1) • due to pre-testing on {cells / animals} before testing on humans (1) • because regulated by legislation (1) <p>(More valid)</p> <ul style="list-style-type: none"> • because a placebo is used as a comparison (1) • because modern testing may involve double-blind trials (1) • because controlling {factors / variables / eq} tested cohort e.g. age, lifestyle (1) <p>(More reliable)</p> <ul style="list-style-type: none"> • because more people are tested (1) • because results are analysed statistically (1) 	No marks awarded for safer, more valid or more reliable	(4)

Q2.

Question Number	Acceptable Answer	Additional guidance	Mark
	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"> • the drug did improve the condition of the patients more than the placebo but it was only 6 au with a concentration of 400 mg so not much of an improvement (1) • increasing the dosage by a further 200 mg doubled the improvement over the placebo (1) <p>Plus one from:</p> <ul style="list-style-type: none"> • therefore to be effective higher doses of the drug would be required (1) • statistical tests would be required in order to comment further (1) 		(3)

Q3.

Question Number	Answer	Additional guidance	Mark
(a)(i)	the number of species in { an area / habitat / eq } ;		(1)

Question Number	Answer	Additional guidance	Mark
(a)(ii)	idea of reduction in species richness ;		(1)

Question Number	Answer	Additional guidance	Mark
(b)	idea that the plant was found in only one site (in the wild) ;		(1)

Question Number	Answer	Additional guidance	Mark
(c)(i)	<ol style="list-style-type: none"> 1. from different plants / eq ; 2. to provide genetic variation / eq ; 3. X-rayed ; 4. to check for { viability / viable embryos / eq } ; 	1. ACCEPT large size of seed	(3)

Question Number	Answer	Additional guidance	Mark
(c)(ii)	<ol style="list-style-type: none"> 1. dry and cold ; <p style="text-align: center;">AND any two of the following:</p> <ol style="list-style-type: none"> 2. to {prevent/reduce} enzyme activity ; 3. to prevent germination of seeds ; 4. to prevent microbial growth / decay/decomposition of seeds ; 	IGNORE references to light and low oxygen, ACCEPT low humidity	(3)

Q4.

Question Number	Answer	Additional Guidance	Mark
(i)	<p>An explanation that makes reference to two of the following:</p> <ul style="list-style-type: none"> • check for side effects (1) • different doses to determine safe dose (1) • placebo to make sure that any side effects described were due to the drug (1) 		(2)

Question Number	Answer	Mark
(ii)	<p>The only correct answer is B – 15:1</p> <p><i>A is not correct because incorrect ratio because 90 volunteers were given the drug and 6 became ill</i></p> <p><i>C is not correct because incorrect ratio because 90 volunteers were given the drug and 6 became ill</i></p> <p><i>D is not correct because incorrect ratio because 90 volunteers were given the drug and 6 became ill</i></p>	(1)

Question Number	Answer	Additional Guidance	Mark
(iii)	<p>An explanation that makes reference to the following:</p> <ul style="list-style-type: none"> • both trials used different doses (to determine safe dose) (1) • William Withering did not use healthy volunteers and this drug trial did (1) • William Withering did not use a placebo while this trial did (1) 	ALLOW different concentrations	(3)

Q5.

Question Number	Answer	Additional Guidance	Mark
	<p>An answer making reference to three of the following:</p> <ul style="list-style-type: none"> • SGSV conserves genetic diversity of crops (1) • crop varieties kept in SGSV are protected from { natural disasters / drought / mismanagement / economic factors / effects of climate change } (which can threaten varieties grown by farmers) (1) • crop varieties in SGSV may have traits that are useful in the future, such as { drought resistance / pest resistance / disease resistance / tolerance of changing environmental conditions } (1) • SGSV helps to ensure future food security (if crop varieties currently grown were to fail) (1) 	<p>NOT increases genetic diversity</p> <p>ALLOW seeds for crop varieties IGNORE protection from diseases / pests</p> <p>IGNORE ref to medicinal uses</p>	(3)

Q6.

Question Number	Answer	Additional guidance	Mark
(a)	<ol style="list-style-type: none"> 1. renewable / eq ; 2. resources can be made available for future generations / will not run out / eq ; 3. more (Canola) plants can be grown / eq ; 	<ol style="list-style-type: none"> 2. ACCEPT not finite ACCEPT references to either oil or plants not running out 	(2)

Question Number	Answer	Additional guidance	Mark
(b)	<ol style="list-style-type: none"> 1. amino acids OR proteins ; 2. idea of used in synthesis of { nucleic acids / DNA / ATP } ; 3. idea of how this organic compound is used in growth; 	<ol style="list-style-type: none"> 2. ACCEPT RNA, NAD, NADP, ADP, chlorophyll 3. (amino acids) for the synthesis of proteins, (proteins) as enzymes, (nucleic acids) for cell division, (ATP) as an energy source 	(2)

Question Number	Answer	Mark
(c) (i)	A a negative correlation ;	(1)

Question Number	Answer	Additional guidance	Mark
(c)(ii)	<p>1. correct values from graph, i.e. 2.40 and 3.30 ;</p> <p>2. difference divided by 2.4, e.g. $(0.9 \div 2.4) \times 100$;</p> <p>3. 37.5 (%) ;</p>	<p>Correct answer gains 3 marks</p> <p>1. 2.4 and 3.3</p> <p>2. $(3.30-2.40) \times 100 / 2.40$ ACCEPT $(\text{difference} \div \text{original value}) \times 100$ if incorrect values selected from graph</p>	(3)

Question Number	Answer	Additional guidance	Mark
(c)(iii)	<p>1. idea of using genetically similar plants e.g. raised from seeds from same plant, clones ;</p> <p>2. idea of repeats {at each level of nitrate fertiliser / used to produce mean data / to identify outliers or anomalies} ;</p> <p>3. environmental variable related to soil controlled e.g. soil pH, concentration of other mineral ions ;</p> <p>4. another environmental variable controlled e.g. temperature, light (intensity), water ;</p> <p>5. idea of control described, e.g. no nitrate/ soil with no extra nitrate ;</p> <p>6. idea of same method of extraction of oil used ;</p>	<p>IGNORE reference to time as the investigation is measuring seed production</p> <p>1. ACCEPT cuttings</p> <p>3. ACCEPT same area, location</p>	(4)

Q7.

Question Number	Answer	Additional Guidance	Mark
	<p>An answer that makes reference to the following:</p> <ul style="list-style-type: none">• more plants can be grown (1)• {plants / plant fibres} are a renewable resource /resource available to future generations (1)	ALLOW plants can be regrown	(2)