

**Unit Code:** H420/02

**Qual Name:** A level Biology A

**Qual Title:** Biological diversity

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments
1	1ai	2	3	1.1.1c, 1.1.2a, 1.1.4c, 4.2.1bi, 6.3.1e	Evaluation	This question is about limitations of sampling techniques, evaluation of sampling size and comparison between conservation and preservation.	Suggesting limitations of sampling procedure. Synoptic with Biodiversity and Ecosystems
1	1aii	4	3	1.1.4c, 1.1.4d, 4.2.1bi, 6.3.1e	Evaluation	This question is about limitations of sampling techniques, evaluation of sampling size and comparison between conservation and preservation.	Calculation and evaluation of conclusion drawn from sampling results. Synoptic with Biodiversity and Ecosystems
1	1aiii	2	3	1.1.4c, 6.3.1e	Evaluation	This question is about limitations of sampling techniques, evaluation of sampling size and comparison between conservation and preservation.	Suggesting limitations of sampling procedure. Synoptic with Biodiversity
1	1b	3	2	6.3.2c, 6.3.2d, 6.3.2e	Populations and sustainability	This question is about limitations of sampling techniques, evaluation of sampling size and comparison between conservation and preservation.	Applying knowledge of conservation and preservation to example
2	1ai	1	2	6.1.2bi	Patterns of inheritance	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Working out gametes in a dihybrid cross
2	1aii	2	2	6.1.2bi	Patterns of inheritance	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Working out offspring genotypes in a dihybrid cross

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2	1bi	3	2	1.1.3b, 6.1.2c	Patterns of inheritance	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Chi-squared test. Synoptic with Analysis.
2	1bii	3	3	1.1.4a, 6.1.2bi, 6.1.2c	Patterns of inheritance	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Statistical significance of chi-squared test. Synoptic with Evaluation.
2	1biii	3	2	6.1.2aii, 6.1.2bii	Patterns of inheritance	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Applying knowledge to explain phenotype ratios
2	1ci	6	1	2.1.2m, 2.1.3f, 2.1.3g, 2.1.4c, 6.1.1a	Nucleotides and nucleic acids	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	LoR about protein synthesis and the effects of mutations. Synoptic with Biological molecules, Enzymes and Cellular control
2	1cii	1	1	2.1.3g	Nucleotides and nucleic acids	This question is about dihybrid genetic cross, explanation of phenotypic ratios, protein synthesis and the effects of mutations, including evaluation and analysis and the Chi square test.	Application of protein synthesis knowledge to effect of genotype on phenotype.
3	1a	2	1	4.1.1c	Communicable diseases, disease prevention and the immune system	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Applying knowledge of plant defences
3	1bi	2	3	1.1.1b, 6.2.1ai	Cloning and biotechnology	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Justifying use of clones in investigation. Synoptic with planning
3	1bii	2	1	6.2.1bi, 6.2.1gi	Cloning and biotechnology	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Producing plant clones by tissue culture

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3	1biii	3	2	1.1.3b	Analysis	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Calculation of area from graph
3	1biv	1	2	1.1.3b	Analysis	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Calculation of proportion. Synoptic with Transport in plants
3	1bv	2	3	1.1.1c, 4.1.1a	Communicable diseases, disease prevention and the immune system	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Justifying chosen method for analysing results. Synoptic with Planning
3	1bvi	2	3	1.1.1b	Planning	This question is about plant defences and plant clones by tissue culture, including experimental planning and data analysis	Identifying control variables
4	1a	2	2	1.1.3a, 4.2.2a	Analysis	This question is about different classification systems, phylogeny and homeobox genes, including data analysis	Identifying differences between two hand images.. Synoptic with Classification and evolution
4	1bi	2	2	1.1.3b, 1.1.3c, 4.2.2d, 4.2.2e	Analysis	This question is about different classification systems, phylogeny and homeobox genes, including data analysis	Calculation of rate from graph. Synoptic with Classification and evolution
4	1bii	2	2	1.1.3b, 4.2.2e	Analysis	This question is about different classification systems, phylogeny and homeobox genes, including data analysis	Reading from graph and calculating uncertainty. Synoptic with Classification and evolution
4	1biii	6	3	1.1.3a, 1.1.4a, 4.2.2a, 4.2.2cii, 4.2.2d	Classification and evolution	This question is about different classification systems, phylogeny and homeobox genes, including data analysis	Level of response evaluating evidence for reclassification of humans and chimpanzees. Synoptic with Analysis and Evaluation
4	1biv	1	3	4.2.2e, 6.1.1c	Cellular control	This question is about different classification systems, phylogeny and homeobox genes, including data analysis	Drawing a conclusion from evidence about homeobox genes. Synoptic with Classification and evolution
5	1aii	2	2	2.1.2d, 2.1.2e	Biological molecules	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Comparing the structures of disaccharides

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5	1aii	3	2	2.1.2d, 2.1.2e	Biological molecules	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Comparing the structures of disaccharides
5	1bi	3	1	2.1.2d, 2.1.2g	Biological molecules	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Describing the properties of a monosaccharide
5	1bii	2	2	2.1.2d, 2.1.5di	Biological membranes	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Applying knowledge of carbohydrate structure to the role of membranes. Synoptic with Biological molecules
5	1biii	2	2	6.1.1b	Cellular control	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Applying knowledge of lac operon in context
5	1c	4	1	1.1.2a, 2.1.2r	Biological molecules	Synoptic question on the structure and properties of disaccharides, cell membrane, lac operon and biochemical tests (ie. Benedict's)	Describing how to do Benedicts calibration. Synoptic with Implementation
6	1a	3	1	2.1.3di, 6.1.3fi, 6.1.3fii	Manipulating genomes	This question is about the process of genetic engineering and the ethical issues about using genetic modification	Describing the process of genetic engineering. Synoptic with Nucleotides and nucleic acids
6	1b	3	1	2.1.3di, 6.1.3fi, 6.1.3fii	Manipulating genomes	This question is about the process of genetic engineering and the ethical issues about using genetic modification	Describing the process of genetic engineering. Synoptic with Nucleotides and nucleic acids
6	1c	3	1	6.1.3fii	Manipulating genomes	This question is about the process of genetic engineering and the ethical issues about using genetic modification	Describing the process of genetic engineering
6	1d	2	1	6.1.3fii	Manipulating genomes	This question is about the process of genetic engineering and the ethical issues about using genetic modification	Describing the process of genetic engineering
6	1e	1	1	6.1.3g	Manipulating genomes	This question is about the process of genetic engineering and the ethical issues about using genetic modification	Identifying an ethical concern about genetic modification

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments
7	1ai	1	1	2.1.6c, 2.1.6d	Cell division, cell diversity and cellular organisation	This question is about the stages and role of mitosis and the different types of microscopes, including implementation and data analysis (calculate volume)	Naming stage of mitosis from image
7	1aii	4	2	1.1.2c, 2.1.6d	Cell division, cell diversity and cellular organisation	This question is about the stages and role of mitosis and the different types of microscopes, including implementation and data analysis (calculate volume)	Drawing and labelling a cell from a image. Synoptic with implementation
7	1bi	3	2	1.1.3a, 1.1.3b, 2.1.6d	Analysis	This question is about the stages and role of mitosis and the different types of microscopes, including implementation and data analysis (calculate volume)	Scaling and volume calculation. Synoptic with Cell division, cell diversity and cellular organisation
7	1bii	2	3	1.1.2a, 2.1.1a, 2.1.6d	Cell structure	This question is about the stages and role of mitosis and the different types of microscopes, including implementation and data analysis (calculate volume)	Identifying type of microscope from image. Synoptic with Implementation and Cell division, cell diversity and cellular organisation
7	1biii	1	1	2.1.6e, 6.1.1d	Cell division, cell diversity and cellular organisation	This question is about the stages and role of mitosis and the different types of microscopes, including implementation and data analysis (calculate volume)	Roles of mitosis. Synoptic with Cellular control
8	1ai	3	2	1.1.3d, 6.3.2a, 6.3.2b	Populations and sustainability	This question is about population growth curves and limiting factors, competition between species, including evaluation and data analysis (mean decrease in the population)	Explaining population changes on a graph. Synoptic with analysis
8	1aii	2	2	1.1.3a, 1.1.3b, 6.3.2b	Analysis	This question is about population growth curves and limiting factors, competition between species, including evaluation and data analysis (mean decrease in the population)	Calculating rate from graph. Synoptic with Populations and sustainability

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8	1bi	3	3	1.1.4a, 4.2.1f, 6.3.2a, 6.3.2b	Populations and sustainability	This question is about population growth curves and limiting factors, competition between species, including evaluation and data analysis (mean decrease in the population)	Evaluating a conclusion drawn from graphical data. Synoptic with Evaluation and Biodiversity
8	1bii	2	3	1.1.1c, 4.2.1f, 6.3.2a, 6.3.2b	Populations and sustainability	This question is about population growth curves and limiting factors, competition between species, including evaluation and data analysis (mean decrease in the population)	Suggesting evidence to support a conclusion
9	1	6	1	6.1.2h(i)	Patterns of inheritance	This is a Level of response question on selective breeding	Level of response on selective breeding
10	1a	1	3	1.1.1b, 6.2.1h(ii)	Cloning and biotechnology	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Identifying variables for bacterial growth investigation. Synoptic with Planning
10	1bi	2	2	1.1.3a, 1.1.3b, 6.2.1h(ii)	Cloning and biotechnology	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Serial dilution calculation. Synoptic with Analysis
10	1bii	3	3	1.1.2a, 1.1.4c, 1.1.4d, 1.1.4e, 6.2.1h(ii)	Cloning and biotechnology	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Evaluating method for calculating bacterial growth. Synoptic with Evaluation and Implementation
10	1ci	6	2	1.1.3a, 1.1.4a, 2.1.4d(i), 6.2.1h(i), 6.2.1h(ii)	Cloning and biotechnology	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Level of response comparing and explaining bacterial growth curves.. Synoptic with Analysis and Enzymes

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10	1cii	2	3	1.1.1a, 6.2.1h(ii)	Planning	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Importance of negative control in bacterial growth investigation. Synoptic with Cloning and biotechnology
10	1ciii	1	3	1.1.2a, 6.2.1g(i), 6.2.1h(ii)	Implementing	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Reason for culturing bacteria at certain temperature. Synoptic with Cloning and biotechnology
10	1civ	3	3	1.1.4c, 1.1.4e, 6.2.1h(ii)	Evaluation	This question is about bacterial growth investigation in the lab, including serial dilution calculation, evaluation of experimental data, explaining and comparing bacterial growth curves.	Importance of replicates. Synoptic with Cloning and biotechnology
11	1ai	2	2	1.1.3a, 1.1.3b	Analysis	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Calculation of percentage difference
11	1aaii	2	3	1.1.3a, 1.1.4a, 4.2.2f	Evaluation	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Concluding from graph. Synoptic with Classification and evolution
11	1aiii	1	3	1.1.3a, 1.1.4a, 4.2.2f	Analysis	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Interpreting graphical data. Synoptic with Analysis and Biodiversity

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11	1aiv	2	2	4.2.2f, 6.1.2d	Patterns of inheritance	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Applying knowledge about causes of variation. Synoptic with Classification and evolution
11	1bi	1	1	4.2.1e	Biodiversity	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Measuring genetic diversity
11	1bii	2	2	6.1.2e	Patterns of inheritance	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Explaining consequences of a genetic bottleneck
11	1biii	2	1	6.1.2e	Patterns of inheritance	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Explaining why genetic drift affects small populations
11	1ci	1	2	1.1.3a, 4.2.2g	Analysis	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Identifying differences between animals from an image. Synoptic with Classification and evolution
11	1cii	4	2	4.2.2h, 6.1.2e, 6.3.2b	Classification and evolution	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Applying knowledge of natural selection to a given example. Synoptic with Patterns of inheritance and Populations and sustainability



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11	1ciii	3	1	4.2.2h, 6.1.2e, 6.1.2g	Patterns of inheritance	This question is about genetic variation, causes of variation, measuring genetic diversity, genetic bottleneck, genetic drift, speciation and evolution by natural selection, including evaluation and data analysis.	Conditions needed for speciation. Synoptic with Classification and evolution
12	1a	1	1	6.1.3a	Manipulating genomes	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Defining DNA sequencing
12	1b	2	2	1.1.3b, 6.1.3a	Analysis	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Calculation of ratio. Synoptic with Manipulating genomes
12	1ci	1	1	6.1.3a	Manipulating genomes	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Stating a development in DNA sequencing
12	1cii	2	1	2.1.3a, 2.1.3c	Nucleotides and nucleic acids	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Comparing the structure of two nucleotides
12	1ciii	2	1	2.1.3g, 6.1.3bii	Nucleotides and nucleic acids	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Explaining how DNA sequence affects amino acid sequence. Synoptic with Manipulating genomes
12	1d	4	2	4.1.1i, 6.1.3b(i), 6.1.3b(ii), 6.1.3b(iii)	Manipulating genomes	This question is about the principles and processes of DNA sequencing, bioinformatics, protein synthesis and comparison of nucleotides structure, including data analysis.	Applying knowledge of sequencing and bioinformatics. Synoptic with Communicable diseases, disease prevention and the immune system

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13	1a	1	2	2.1.2h	Biological molecules	Synoptic question on structures of fatty acids, industrial growth requirements of bacteria, advantageous characteristics obtained by natural selection and approaches to maintain biodiversity, including evaluation and planning.	Applying knowledge of fatty acid structure
13	1bi	3	3	1.1.4a, 2.1.2p, 6.2.1e	Cloning and biotechnology	Synoptic question on structures of fatty acids, industrial growth requirements of bacteria, advantageous characteristics obtained by natural selection and approaches to maintain biodiversity, including evaluation and planning.	Applying knowledge of bacterial growth requirements. Synoptic with Evaluation and Biological molecules
13	1bii	1	3	1.1.1b, 1.1.1c, 1.1.4e, 6.2.1e	Planning	Synoptic question on structures of fatty acids, industrial growth requirements of bacteria, advantageous characteristics obtained by natural selection and approaches to maintain biodiversity, including evaluation and planning.	Identifying evidence to support a conclusion. Synoptic with Evaluation and Cloning and biotechnology
13	1c	1	2	4.2.2h, 4.2.2i, 6.1.2e	Patterns of inheritance	Synoptic question on structures of fatty acids, industrial growth requirements of bacteria, advantageous characteristics obtained by natural selection and approaches to maintain biodiversity, including evaluation and planning.	Applying knowledge of selection to example. Synoptic Classification and Evolution
13	1d	2		4.2.1h, 6.3.2c	Populations and sustainability	Synoptic question on structures of fatty acids, industrial growth requirements of bacteria, advantageous characteristics obtained by natural selection and approaches to maintain biodiversity, including evaluation and planning.	Distinguishing examples of conservation and preservation. Synoptic with Biodiversity
14	1ai	2	1	2.1.5e(i)	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Defining osmosis

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14	1aii	3	1	2.1.5e(i)	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	The role of osmosis in plant support
14	1bi	2	2	1.1.3b, 1.1.4d, 2.1.5e(ii)	Analysis	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Calculation of uncertainty. Synoptic with Evaluation and Biological membranes
14	1bii	2	3	1.1.4a, 2.1.5e	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Drawing conclusions from osmosis investigation. Synoptic with Evaluation
14	1ci	2	3	1.1.1a, 2.1.5e(ii)	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Reasons for calculating percentage change in osmosis investigation. Synoptic with Planning
14	1cii	2	3	1.1.4c, 2.1.5e(ii)	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Explaining anomalous data in osmosis investigation. Synoptic with Evaluation
14	1ciii	3	3	1.1.3a, 1.1.4a, 2.1.5e(ii)	Biological membranes	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Drawing and explain conclusion from osmosis investigation. Synoptic with Analysis and Evaluation
14	1d	3	1	2.1.2a	Biological molecules	Synoptic question on properties of water, osmosis and plant support, including experimental investigation of osmosis with evaluation, planning and data analysis (ie. percentage uncertainty, percentage change).	Importance of water to survival.

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15	1ai	1	1	2.1.3d(ii)	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	DNA extraction practical
15	1aai	1	2	2.1.3d(ii)	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	DNA extraction practical
15	1aiii	1	3	1.1.1a, 2.1.3d(ii)	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	DNA extraction practical. Synoptic with Planning
15	1aiv	1	2	1.1.2a, 1.1.4e, 2.1.3d(ii)	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	DNA extraction practical. Synoptic with Implementation and Evaluation
15	1av	1	2	2.1.3d(ii)	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	DNA extraction practical
15	1bi	3	2	6.1.3h	Manipulating genomes	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	Comparing types of gene therapy
15	1bii	2	2	2.1.3f, 6.1.1a, 6.1.3h	Cellular control	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	Explaining effects of inserting bases into DNA. Synoptic with Nucleotides and nucleic acids and Manipulating genomes

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15	1biii	1	2	2.1.3g, 6.1.3h	Nucleotides and nucleic acids	Synoptic question on experimental investigation of DNA extraction, gene therapy, protein synthesis and genetic manipulation, including planning, implementation and evaluation.	Applying knowledge of protein synthesis to gene therapy example. Synoptic with Manipulating genomes
16	1a	2	2	4.2.1g, 6.3.2e	Populations and sustainability	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Explaining effects of tourism on biodiversity. Synoptic with Biodiversity
16	1bi	1	2	1.1.3a	Analysis	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Estimating from a pie chart
16	1bii	2	2	6.3.2d	Populations and sustainability	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Explaining sustainable timber production
16	1biii	6	1	6.3.2d	Populations and sustainability	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Level of response describing and explaining sustainable timber production
16	1ci	3	2	4.2.1d	Biodiversity	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Calculating Simpson's Index of Diversity
16	1cii	3	2	4.2.1a, 4.2.1d, 6.3.2e	Biodiversity	This question is about sustainable timber production, ecotourism, Simpson's Index Diversity and levels of biodiversity, including data analysis.	Applying knowledge of levels at which biodiversity can be considered. Synoptic with populations and sustainability
17	1ai	2	2	6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Describing animal cloning by SCNT

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17	1aii	1	2	6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Describing animal cloning by SCNT
17	1aiii	1	2	6.2.1c, 6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Applying knowledge of animal cloning by SCNT
17	1bi	2	2	1.1.3d(i), 6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Suggesting reasons for choosing axis on graph of cloning data. Synoptic with Analysis
17	1bii	3	3	1.1.3d(i), 1.1.4a, 6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Evaluating a conclusion drawn from a graph. Synoptic with Analysis and Evaluation
17	1ci	2	2	6.2.1d(i), 1.1.3b	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Calculation of percentage. Synoptic with Analysis
17	1cii	3	3	1.1.1b, 1.1.4c, 6.2.1d(i)	Cloning and biotechnology	This question is about cloning of animals using somatic cell nuclear transfer, including planning of experiment, evaluation of results and data analysis	Identifying control variables. Synoptic with Planning and Evaluation
18	1ai	4	1	6.2.1aii	Cloning and biotechnology	This question is about plant cloning using cutting and the advantages of vegetative propagation, including a level of response question on evaluation of experimental design of plant growth investigation.	Describing how to take a cutting
18	1aii	6	3	1.1.1c, 1.1.4c, 1.1.4e, 6.2.1aii	Evaluation	This question is about plant cloning using cutting and the advantages of vegetative propagation, including a level of response question on evaluation of experimental design of plant growth investigation.	LoR about improving confidence in valid plant growth investigation. Synoptic with Planning and Cloning and biotechnology

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18	1b	3	1	6.2.1bii	Cloning and biotechnology	This question is about plant cloning using cutting and the advantages of vegetative propagation, including a level of response question on evaluation of experimental design of plant growth investigation.	Listing advantages of vegetative propagation
19	1ai	2	2	1.1.3b, 2.1.2j	Analysis	This is a question about the structure and properties of lipids including calculation of the surface area of a sphere.	Calculation of surface area of a sphere. Synoptic with Biological molecules
19	1aaii	1	3	2.1.2j	Biological molecules	This is a question about the structure and properties of lipids including calculation of the surface area of a sphere.	Drawing a conclusion from lipid density data
19	1b	6	1	2.1.2j	Biological molecules	This is a question about the structure and properties of lipids including calculation of the surface area of a sphere.	Gap fill about structure and role of lipids
19	1c	2	1	2.1.2i	Biological molecules	This is a question about the structure and properties of lipids including calculation of the surface area of a sphere.	Explain hydrolysis of triglycerides
20	1	1	2	1.1.3b, 1.1.3d(ii)	Analysis		Measurement of gradient and intercept from a graph
21	1	1	1	2.1.5a	Biological membranes		
21	2	1	1	2.1.2f, 2.1.2b	Biological molecules		
21	3	1	1	2.1.3e	Nucleotides and nucleic acids		
21	4	1	2	2.1.5d(i)	Biological membranes		
21	5	1	1	2.1.5b, 2.1.2c	Biological membranes		Synoptic with biological molecules
21	6	1	1	2.1.1f	Cell structure		
21	7	1	2	2.1.1e	Cell structure		NB: animal must measure 9.24mm when reproduced to allow for correct answer
21	8	1	1	2.1.2h, 2.1.3b	Biological molecules		Synoptic with Nucleotides and nucleic acids
21	9	1	2	2.1.2k	Biological molecules		
21	10	1	1	2.1.2h, 2.1.2j	Biological molecules		
21	11	1	1	2.1.6a	Cell division, cell diversity and cellular organisation		
21	12	1	1	2.1.6b	Cell division, cell diversity and cellular organisation		
21	13	1	2	2.1.2d, 2.1.3a	Nucleotides and nucleic acids		Synoptic with Biological molecules

Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments
21	14	1	2	2.1.4c, 2.1.4f	Enzymes		
22	1	1	1	4.1.1e	Communicable diseases, disease prevention and the immune system		
22	2	1	1	4.2.1c	Biodiversity		
22	3	1	1	4.1.1d	Communicable diseases, disease prevention and the immune system		
22	4	1	1	4.1.1b	Communicable diseases, disease prevention and the immune system		
22	5	1	2	4.2.2b	Classification and evolution		
22	6	1	1	4.1.1i	Communicable diseases, disease prevention and the immune system		
22	7	1	1	4.1.1k	Communicable diseases, disease prevention and the immune system		
22	8	1	1	4.2.1i	Biodiversity		
22	9	1	1	4.2.1f	Biodiversity		
22	10	1	1	4.1.1m, 4.1.1f	Communicable diseases, disease prevention and the immune system		
22	11	1	2	4.1.1d, 2.1.6e	Communicable diseases, disease prevention and the immune system		Synoptic with Cell division, cell diversity and cellular organisation
23	1	1	2	6.1.2a(ii)	Patterns of inheritance		
23	2	1	1	6.3.1d	Ecosystems		
23	3	1	2	6.3.2a	Populations and sustainability		
23	4	1	1	6.1.3h	Manipulating genomes		
23	5	1	1	6.1.1d	Cellular control		
23	6	1	1	6.1.2e, 4.1.1n, 4.2.2e, 4.2.2i	Patterns of inheritance		synoptic with 4.1.1 and 4.2.2
23	7	1	1	6.2.1e	Cloning and biotechnology		
23	8	1	1	6.2.1f	Cloning and biotechnology		
23	9	1	1	6.3.1a	Ecosystems		
23	10	1	2	6.3.1a	Ecosystems		
23	11	1	1	6.1.1c	Cellular control		
23	12	1	2	6.1.1a	Cellular control		
23	13	1	1	6.1.2a(ii)	Patterns of inheritance		
23	14	1	2	6.1.2d, 4.2.2f	Patterns of inheritance		Synoptic with Classification and evolution
23	15	1	1	6.1.2h(ii)	Patterns of inheritance		
23	16	1	1	6.1.3g	Manipulating genomes		
23	17	1	2	6.3.1e	Ecosystems		



Question Set	Q. No	Total Marks	AO	Spec Ref.	Topic	Question Subject, If required	Additional Notes/Comments
23	18	1	2	6.2.1c	Cloning and biotechnology		
23	19	1	2	6.1.2f	Patterns of inheritance		