

CfE Higher Biology

Unit 1 DNA and the Genome

Key Area 8 Genomic Sequencing

Marking Instructions

1. D
2. B
3. D
4. D
- 5.

(a)		0.24	1	
(b)		32	1	
(c)		Inclusive scale and axes labels copied exactly from table headings 1 Points plotted and joined with a ruler 1	2	
(d)		Only donor 2 is suitable OR donor 2 is most suitable	1	
(e)	(i)	TACTGTTTAGC	1	
	(ii)	Separates strands/splits up DNA strands/breaks H bonds between strands/denatures DNA/unzips DNA 1 Any temperature from 50 - 65 1	2	NOT - splits DNA alone

6.

(a)	(i)	550	1	
	(ii)	260	1	
	(iii)	Last common ancestor (of rats and humans) was more recent (than rats and frogs). OR Last/most recent common ancestor of rats and humans was 90 million years ago while rats and frogs was 420 million years ago. OR Rats diverged more recently from humans than from frogs.	1	
(b)	(i)	28	1	
	(ii)	Any value from 27 to 28	1	
(c)		21	1	

7.

(a)	(i)	Any TWO from: Size/mass/of muscle (tissue)/ sample. Type of muscle tissue/age of fish. Temperature/pH/time. Volume/concentration/type of solution.	2	NOT - Volume of muscle (tissue). NOT - Mass/species of fish. NOT - Same solution. NOT - "Concentration"/"Volume" alone. Additional incorrect variables (e.g. Light intensity/ oxygen concentration/ CO ₂ concentration) negates 1 mark.
	(ii)	Hydrogen/ionic/disulphide/Van der Waals/hydrophobic/covalent.	1	NOT - Peptide (negates correct answer).
(b)	(i)	Correct scales (0-110 kDa and 0-50 mm) and label. (1)	2	If axes transposed scales and labels mark not awarded.
		Correctly plotted. (1)		
	(ii)	32 kDa or whatever plotted graph shows.	1	
	(iii)	550	1	
(b)	(iv)	1, 2 and 4 each have three bands/proteins in common/at the same distance AND 3 only has one band in common with the other three species. OR They/1, 2 and 4 have more bands/proteins in common/the same/similar or converse.	1	NOT - Proteins 1, 2 and 4 all have band X.

8.

(a)		Sequence (data)	1	
(b)		Horizontal/lateral	1	
(c)	(i)	25	1	
	(ii)	Last common ancestor of humans and chimpanzees was more recent than humans and orangutans.	1	