

CfE Higher Biology

Unit 1 DNA and the Genome

Key Area 5/6 Structure of the Genome and Mutations

Marking Instructions

1. D
2. A
3. B
4. B
5. D
6. B

7.	a		translocation	1	
	b	i	competitive	1	
	b	ii	95	1	
	b	iii	Drug was effective as white blood count reduced to normal Drug works by inhibiting the enzyme produced by Philadelphia chromosome	2	

8.	(a)		Introns	1	NOT- non-coding regions.
	(b)		1,3,4/2,3,4	1	Must be in correct order and inversions not acceptable.
	(c)	(i)	Shorter protein/fewer amino acids.(1) <u>Stop</u> codon is produced earlier (in the sequence) (1)	2	NOT- non-functional protein. NOT- protein is short. NOT- stop codon is produced alone.
		(ii)	Every amino acid after the mutation is changed/affected.	1	NOT- frame shift mutation alone.

9.	(a)	(i)	Deletion/insertion	1	
		(ii)	<p>Effect on lactase gene: All the codons/base sequences nucleotide sequences/ triplets/ bases/nucleotides after the mutation will change/will move along.</p> <p>OR</p> <p>All the following codons/base sequences nucleotide sequences/triplets will change. (1)</p> <p>Effect on structure of lactase: All the amino acids after the mutation may change (1)</p>	2	NOT - Amino acids produced/made.
	(b)	(i)	<p>Gene is permanently switched on.</p> <p>OR</p> <p>More transcription occurred.</p> <p>OR</p> <p>Repressor molecule not produced so operator permanently switches on gene/gene not switched off.</p>	1	
		(ii)	Founder effect/genetic drift.	1	