



CHEMISTRY ONLINE
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BIOLOGY

BIOLOGICAL MOLECULES

LEVEL & BOARD:	AQA (A - LEVEL)
TOPIC:	Enzymes
PAPER TYPE:	Solution 2
TOTAL QUESTIONS:	03
TOTAL MARKS:	25

Enzyme and Protein 2

1.

(a)

- Enzymes increase reaction rates by lowering activation energy, but do not affect the favorability of a reaction.! They don't affect the concentrations of products and reactants at equilibrium.
- Due to the bending of bonds.

(b)

Allow 1 max for

$$578/3.0 \times 10^{-9}$$

$$1.93 \times 10^x \text{ when } x \neq 11$$

Correct answer with incorrect standard form e.g. 19.3×10^{10}

(Accept any number of significant figures ≥ 2 , if rounding correct (1.926×10^{11}). Same principle applies to one max answers.)

(c)

$$= (0.44/1.4) \times 100$$

$$= 0.31 \times 100$$

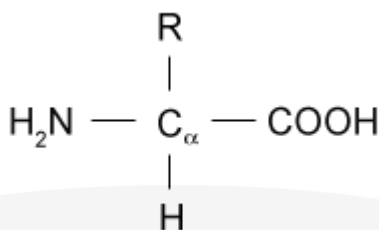
$$= 31.4\%$$

(d) When lyxose bind to enzyme:

- Alters tertiary structure of enzyme
- Active site changes shape
- More enzyme- substrate complexes are formed, increasing rate of reaction.

2.

(a)

(b) *More than one codon codes for a single amino acid.**UGU codes for 'Cys' amino acid, UGC also codes for 'Cys' amino acid*(c) $465 \times 3 = 1395$ (d) $\text{CAA} \rightarrow \text{CGA}$

(e)

- *A negatively charged to positively charged change in amino acid.*
- *Change at amino acid 300 doesn't change the shape of the active site.*
- *Amino acid 279 may have been involved in ionic, hydrogen bonds and disulfide bridges- changing active site shape*

3.(a)

- *IV on x axis and DV on y axis and both axes on linear scales;*
- *Axes labelled clearly and with correct units separated from variable by solidus or in brackets;*
- *All rates calculated correctly*
- *Points plotted correctly and joined by ruled lines and no extrapolation*

(b) *Yes**It is similar to temperature where bacterium lives**The optimum temperature for enzyme (appears to be around) 15 °C*

(c)

- *Initial / starting substrate concentration*
- *Enzyme concentration*
- *pH*



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
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