

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

(a) % O = 21.6 % (1)

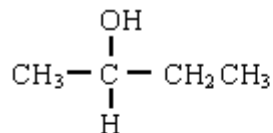
If % O not calculated only M2 available

$\begin{array}{r} 64.9 \\ \text{C } 12 \\ \hline \end{array}$	$\begin{array}{r} 13.5 \\ \text{H } 1 \\ \hline \end{array}$	$\begin{array}{r} 21.6 \\ \text{O } 16 \\ \hline \end{array}$
= 5.41	= 13.5	= 1.35

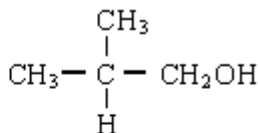
Ratio: 4 : 10: 1 (∴ C₄H₁₀O) (1)*If arithmetic error in any result lose M3**If percentage composition calculation done zero*

3

(b) (i) Type of alcohol: Tertiary (1)

Reason: No hydrogen atom on central carbon (1)

(1)



(1)

(ii) *Isomer 3**Isomer 4**Penalise missing bonds / incorrect bonds once per paper*

4

(c) (i) Aldehyde (1)

Ignore named aldehydes or their structures, penalise wrong named compound(ii) CH₃CH₂CH₂CH₂OH + [O] → CH₃CH₂CH₂CHO + H₂O (1)
Balanced (1)*C₄H₁₀O is OK as a reactant**[O] can be over arrow**C₃H₇CHO not accepted for product, but C₂H₅CH₂CHO is OK**If use C₃ or C₅ compounds no marks in (ii) C.E of wrong alcohol*

(iii) Name Butanoic acid (1)

Structure: CH₃CH₂CH₂COOH (1)*mark conseq. or as stated*

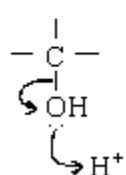
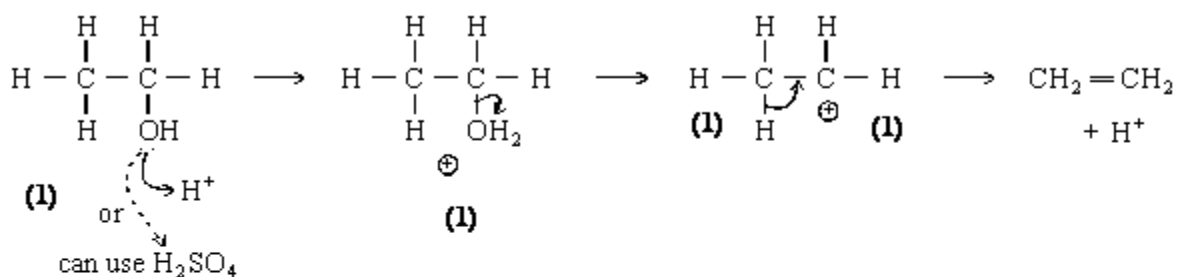
5

- (d) *Advantage*: Fast reaction OR pure product OR continuous process
 OR cheap on manpower OR high yield, 100% alcohol **(1)**
Disadvantage: High technology OR ethene from non renewable source
 OR expensive equipment not just costly **(1)**

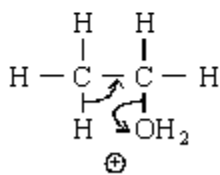
Not answers based on fermentation

2

(e)



scores M1 only



scores M2 & M4
 but not carbocation mark, M3.

4

[18]