Name of the Student:_____
Max. Marks : 28 Marks **Time : 28 Minutes**

Mark Schemes

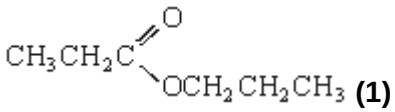
Q1.

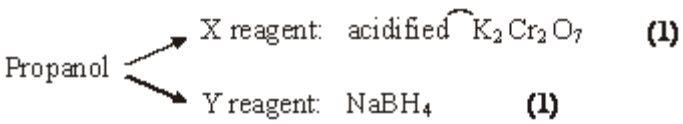
(a) X contains > C=O **(1)**

if X and Y reversed lose this mark but allow remaining max 6/7

∴ X is CH_3CH_2COOH **(1)**

∴ Y is $CH_3CH_2CH_2OH$ **(1)**

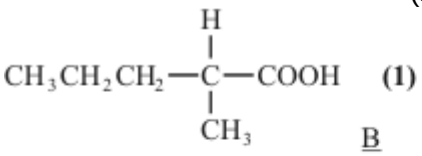
∴ A is  **(1)**

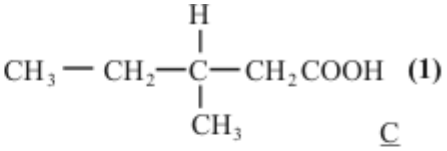


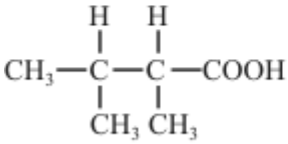
Conc H_2SO_4 : catalyst **(1)**

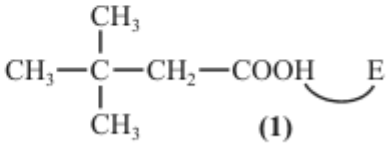
7

(b)

 **(1)** B

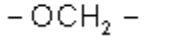
 **(1)** C

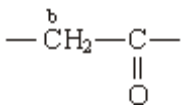
 **(1)** D

 **(1)** E

in any order

4

(c)  3.1 – 3.9 **(1)**

 2.1 – 2.6 **(1)**

a: quartet **(1)** ⌒ 3 adjacent H **(1)**

b: triplet **(1)** ⌒ 2 adjacent H **(1)**

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(d) 3269 cm^{-1} ∴ OH ⌒ alcohol **(1)**

∴ G is (1)

2

Notes

(a) first mark for C=O stated or shown in **X**

Ignore wrong names

Y $CH_3CH_2CH_2OH$

allow C_3H_7 in **A** if **Y** correct or vice versa

Allow **(1)** for **A** if correct conseq to wrong **X** and **Y**

other oxidising agents: acidified $KMnO_4$; Tollens; Fehlings

other reducing agents: $LiAlH_4$; Na/ethanol; Ni/H_2; Zn or Sn or Fe/HCl

(b) give **(1)** for carboxylic acid stated or COOH shown in each suggestion

(1) for correct **E**

any 2 out of 3 for **B**, **C** or **D**

allow C_3H_7 for either the **B** or **D** shown on the mark scheme

i.e. a correct structure labelled **B**, **C** or **D** or **E** will gain 2.

(c) protons a – *quartet* must be correct to score *3 adjacent H* mark. Same for b

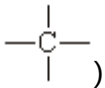
(d) allow **(1)** for any OH (alcohol) shown correctly in any structure – ignore extra functional groups. Structure must be completely correct to gain second mark

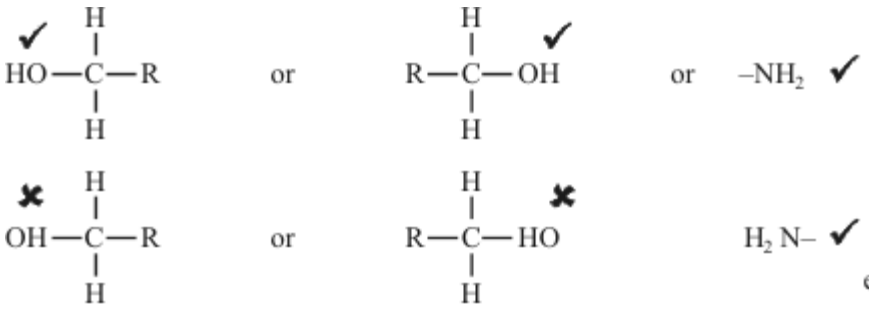
[19]

Organic points

(1) Curly arrows: must show movement of a pair of electrons,
i.e. from bond to atom or from lp to atom / space
e.g.

(2) Structures

penalise sticks (i.e. ) once per paper



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Penalise once per paper

allow CH_3– or –CH_3 or or CH_3
or H_3C–

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Q2.

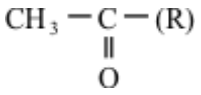
(a) 5 **(1)**

1

(b) 2:2:2:3:3 **(1)**

any order but not multiples

1

(c)  **(1)**

1

(d) CH_3CH_2 or C_2H_5 or ethyl **(1)**

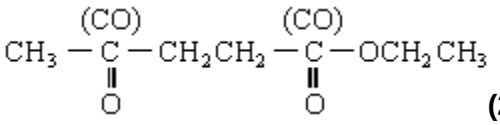
δ4.13 (quartet) : CH_2 peak split by CH_3 / next to CH_3 **(1)**

δ1.26 (triplet) : CH_3 peak split by CH_2 / next to CH_2 **(1)**

3

(e) CH_2CH_2 **(1)**

1

(f)  **(2)**

*allow **(1)** for $CH_3COCH_2CH_2OCOCH_2CH_3$*

or $CH_3COOCH_2CH_2COCH_2CH_3$

Must be $C_7H_{12}O_3$

2

[9]

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