Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Physical

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

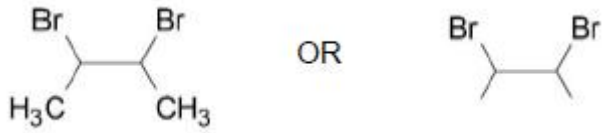
Q1.

(a) 2,3-dimethylbutane(-1,4-)dioic acid

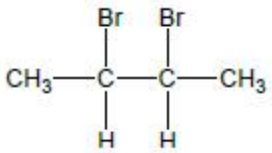
Penalise other numbers.
Ignore hyphens, commas, spaces.

1

(b)



Allow displayed formula



1

Step 1:

HBr

1

Electrophilic addition

1

Step 2:

KCN

Not HCN, not KCN with acid.

1

Nucleophilic substitution

1

Step 3:

Hydrolysis

1

(c)

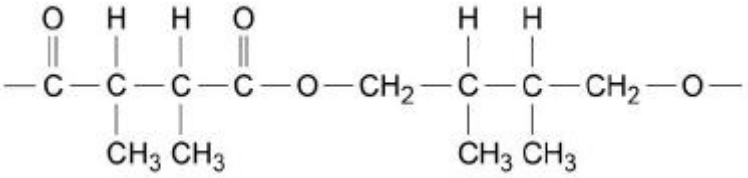
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	Mark
Reagent	1
Observation with **F**	1
Observation with **G**	1

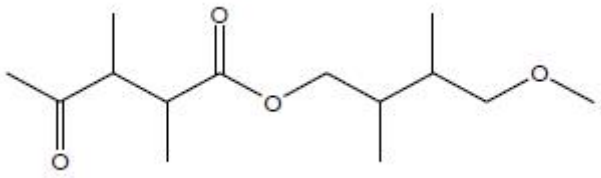
$K_2Cr_2O_7$ & H_2SO_4 (allow acidified)	Mg	Na_2CO_3 or $NaHCO_3$
F: no visible change	**F:** effervescence	**F:** effervescence
G: orange to green	**G:** no visible change	**G:** no visible change

Named alcohol and conc. sulfuric acid	Named carboxylic acid and conc. sulfuric acid
F: pleasant smell	**F:** no visible change
G: no visible change	**G:** pleasant smell

(d)



OR



Two ester groups.

1

One unit only.
Must have trailing bonds.
Ignore n and brackets.

1

(e) Mass of **G** = (1.11×10^3) $cm^3 \times 1.04$ g $cm^{-3} = 1154$ g

65.1 scores 4 marks.

1

Amount of **G** $\frac{1154}{Mr = 118}$ = 9.78 mols

1

Amount of **F** (actual) = $\frac{930}{Mr = 146}$ =

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6.37 mol

OR

Expected mass of **F** = 9.78 × (M_r =)

146 = 1428 g

1

% yield = $\frac{6.37}{9.78}$ × 100 = 65.1(%)

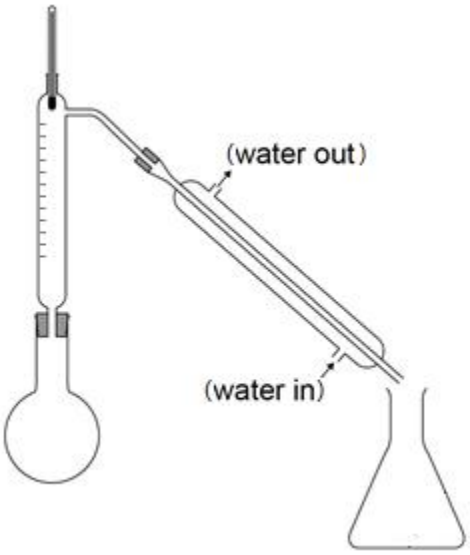
OR

% yield = $\frac{930}{1428}$ × 100 = 65.1(%)

M4 answer must be to 3 significant figures.

1

(f) Fractional distillation



A rough labelled sketch illustrating these points scores the marks.

1

Apparatus for fractional distillation must clearly work with fractionating column.

1

Fractionating column and thermometer.

1

Condenser / water jacket.

Ignore heat source.

1

[20]

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