2018 HCI C2 H2 Chemistry Preliminary Exam Paper 4 Preparation Instructions

Safety

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Only those tests described in the Question Paper should be attempted.

Attention is drawn in particular, to certain materials used in the examination. The following codes are used where relevant.



'Hazard Data Sheets', relating to materials used in this examination, should be available from your chemical supplier.

Before the Examination

1 Preparation of materials

Where quantities are specified for each candidate, they are sufficient for the experiments described in the Question Paper to be completed.

In preparing materials, the bulk quantity for each substance should be increased by 25% as spare material should be available to cover accidental loss. More material may be supplied if requested by candidates, without penalty.

All solutions should be bulked and mixed thoroughly before use to ensure uniformity.

2 Labelling of materials

Materials must be labelled as specified in these instructions. Materials with an **FA** code number should be so labelled **without** the identities being included on the label. Where appropriate the identity of an **FA** coded chemical is given in the Question Paper itself.

3 Identity of materials

It should be noted that descriptions of solutions given in the Question Paper may not correspond exactly with the specifications in these Instructions. The candidates must assume the descriptions given in the Question Paper.

You should have the following apparatus and chemicals.

Apparatus

- $1 \times 250 \text{ cm}^3$ graduated flask;
- $2 \times 50 \text{ cm}^3$ burettes;
- $2 \times$ stands and clamps to hold the burettes;
- $2 \times funnels;$
- $1 \times$ white tile;
- 1×25 cm³ pipette;
- $1 \times pipette filler (or equivalent safety device);$
- $1 \times 250 \text{ cm}^3$ conical flask;
- $2 \times 10 \text{ cm}^3$ measuring cylinders;
- 1×25 cm³ measuring cylinder;
- $1 \times 50 \text{ cm}^3$ measuring cylinder;
- $1 \times permanent$ marker pen suitable for writing on glass;
- $1 \times$ wash bottle containing deionised water;
- 1 \times thermometer with range –5 °C to +100 °C, graduated to 0.5 $\,$ C;
- $7 \times \text{test-tubes};$
- $1 \times \text{test-tube rack};$

- $2 \times \text{boiling tubes};$
- $1 \times Bunsen burner;$
- $1 \times 250 \text{ cm}^3$ beaker;
- $1 \times \text{test-tube holder};$
- $1 \times$ delivery tube;
- $1 \times pair$ of disposable vinyl gloves;
- $1 \times pair of safety goggles;$
- Access to deionised water;
- Access to a weighing balance;
- A clear plastic bag containing:
 - $5 \times dropping pipettes;$
 - $1 \times$ weighing bottle;
 - $2 \times Styrofoam$ cups;
 - $1 \times \text{plastic lid};$
 - $1 \times spatula;$
 - $1 \times wooden splint;$
 - $3 \times$ litmus papers;
 - $2 \times filter papers.$

<u>Chemicals</u>

In clear	Collect from	Beside weighing	Bench reagents
plastic bag	leacher's bench	balance	
FA 1	Starch solution	FA 6	aqueous ammonia
FA 2			aqueous sodium hydroxide
FA 3			limewater
FA 4			aqueous potassium
FA 7			manganate(VII)
FA 8			aqueous bromine
FA 9			
FA 10			

FA reagents (1 set for every candidate)						
hazard	label	per candidate	identity	notes		
	FA 1	90 cm ³	0.0700 mol dm ⁻³ potassium iodate(V)			
	FA 2	120 cm ³	1.0 mol dm ⁻³ sulfuric acid, H_2SO_4			
\diamond	FA 3	80 cm ³	0.50 mol dm ⁻³ potassium iodide			
♦	FA 4	100 cm ³	0.1 mol dm ⁻³ sodium thiosulfate			
	Starch solution	10 cm ³	20 g dm ⁻³			
1	FA 6	6 g	Mixture of equal mass of potassium iodide and lithium chloride	stored in a dry , red capped bottle labelled FA 6 (Please cap after each shift) , for students to weigh themselves (with big metal spatula)		
	FA 7	6 g	MnO ₂	Fresh for each shift		
$\mathbf{\tilde{\mathbf{v}}}$	FA 8	1 g	Sodium ethanedioate			
	FA 9	10 cm ³	0.5 mol dm ⁻³ manganese(II) sulfate			
	FA 10	0.5 cm ³	Cyclohexene			

Bench reagents (1 set per seat for 3 shifts)

hazard	label	per	identity
		candidate	
	aqueous ammonia	10 cm ³ per	2 mol dm ⁻³
		shift	
	aqueous sodium hydroxide	10 cm ³ per	2 mol dm ⁻³
		shift	
()	Limewater	10 cm ³ per	
		shift	
	Aqueous potassium	10 cm ³ per	0.02 mol dm ⁻³
	manganate (VII)	shift	
	Bromine water	5 cm ³ per	
		shift	