

**JURONG PIONEER JUNIOR COLLEGE****2025 JC2 H2 CHEMISTRY (9729)****Preliminary Examination Paper 4****(Chemical and Apparatus List)**

Label	Identity	Preparation	per candidate
<b>FA 1</b>	sodium hydrogencarbonate	Provide 6.0–6.1 g of $\text{NaHCO}_3$ in a suitable container	6.0 g
<b>FA 2</b>	1.0 mol $\text{dm}^{-3}$ sulfuric acid, $\text{H}_2\text{SO}_4$ .	Cautiously pour <b>55 cm<sup>3</sup></b> of <b>concentrated</b> (98%) <b>sulfuric acid</b> into 500 cm <sup>3</sup> of DI water with continuous stirring. Make the solution up to 1 dm <sup>3</sup> with DI water. <b>Care: concentrated <math>\text{H}_2\text{SO}_4</math> is very corrosive.</b>	100 cm <sup>3</sup>
<b>FA 3</b>	0.0100 mol $\text{dm}^{-3}$ sodium thiosulfate, $\text{Na}_2\text{S}_2\text{O}_3$ .	Dissolve <b>2.482 g</b> hydrated <b><math>\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}</math></b> (or <b>1.582 g</b> anhydrous <b><math>\text{Na}_2\text{S}_2\text{O}_3</math></b> ) in DI water, then made up to 1 dm <sup>3</sup> with DI water.	200 cm <sup>3</sup>
<b>FA 4</b>	0.0200 mol $\text{dm}^{-3}$ potassium manganate(VII), $\text{KMnO}_4$ .	Dissolve <b>3.16 g</b> of <b><math>\text{KMnO}_4</math></b> in each dm <sup>3</sup> of solution.	60 cm <sup>3</sup>
<b>FA 5</b>	0.200 mol $\text{dm}^{-3}$ ethanedioic acid, $\text{H}_2\text{C}_2\text{O}_4$ .	Dissolve <b>18.0 g</b> anhydrous <b><math>\text{H}_2\text{C}_2\text{O}_4</math></b> (or <b>25.2 g</b> hydrated <b><math>\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}</math></b> ) in DI water, then made up to 1 dm <sup>3</sup> with DI water.	100 cm <sup>3</sup>
<b>FA 6</b>	0.100 mol $\text{dm}^{-3}$ potassium iodide, KI.	Dissolve <b>16.6 g</b> of <b>KI</b> in DI water, then made up to 1 dm <sup>3</sup> with DI water.	100 cm <sup>3</sup>
<b>FA 7</b>	zinc carbonate and potassium iodide	Mix $\text{ZnCO}_3$ and KI thoroughly in the mass ratio of 2 : 1. Provide in a stoppered container. Any form of basic zinc carbonate is suitable.	2.0 g
<b>FA 9</b>	0.5 mol $\text{dm}^{-3}$ ethanoic acid		10 cm <sup>3</sup>
<b>FA 10</b>	10% (v/v) aqueous solution of ethanol	(in stoppered glass vial)	10 cm <sup>3</sup>
<b>Hot water</b>	Central supply	Temp of water set at 90 °C.	200 cm <sup>3</sup>

## On Student's Bench Reagent Rack:

Label	Identity	Preparation
<b>Dilute nitric acid</b>	$2.0 \text{ mol dm}^{-3} \text{ HNO}_3$	Dilute $128 \text{ cm}^3$ of concentrated (70%) nitric acid [C][O] to $1 \text{ dm}^3$
<b>aqueous ammonia</b>	$2.0 \text{ mol dm}^{-3} \text{ NH}_3$	Dilute <b><math>112 \text{ cm}^3</math></b> of <b>concentrated</b> (35%) <b>ammonia</b> to $1 \text{ dm}^3$ using DI water.
<b>aqueous sodium hydroxide</b>	$2.0 \text{ mol dm}^{-3} \text{ NaOH}$	Dissolve <b>80.0 g</b> of <b>NaOH</b> in each $\text{dm}^3$ of soln. Care: the process of soln is exothermic and any concentrated soln is very corrosive.
<b>aqueous silver nitrate</b>	$0.05 \text{ mol dm}^{-3} \text{ AgNO}_3$	Dissolve <b>8.5 g</b> of $\text{AgNO}_3$ in each $\text{dm}^3$ of soln.
<b>limewater</b>	saturated aqueous calcium hydroxide, $\text{Ca(OH)}_2$	Prepare fresh limewater by leaving distilled water to stand over <b>solid calcium hydroxide</b> for several days, shaking occasionally. Decant or filter the soln.
<b>aqueous potassium manganate(VII)</b>	$0.02 \text{ mol dm}^{-3} \text{ KMnO}_4$	Dissolve <b>3.16 g</b> of $\text{KMnO}_4$ in each $\text{dm}^3$ of soln.
<b>Iodine solution</b>	Aqueous iodine, $\text{I}_2$ .	Dissolve <b>10 g</b> of $\text{I}_2$ and <b>20 g</b> of <b>KI</b> in $100 \text{ cm}^3$ of DI water.
<b>Magnesium turnings</b>		Place <b>magnesium turnings</b> in a capped container. (students will use 1 spatula. Last for 3 shifts)
<b>Starch Indicator</b>	freshly prepared aqueous starch indicator (approx 2% solution w/v)	Mix <b>2 g</b> of <b>soluble starch</b> with a little cold water until a smooth paste is obtained. Add <b><math>100 \text{ cm}^3</math></b> boiling water and stir. Boil until a clear solution is obtained (about 5 minutes).
<b>Red litmus papers</b>		
<b>Blue litmus papers</b>		
<b>Wooden splints</b>		
<b>Filter papers</b>		

**Apparatus Lists**

1. weighing balances (Chem lab 3 balance, Bio/Phy Lab 2 balance per lab)
2. stopwatch (1)
3. two polystyrene cup supported in a big beaker (1)
4. 0.2 °C interval thermometer (1)
5. 50.00 cm<sup>3</sup> burette (1)
6. retort stand and clamp (1)
7. glass filter funnel (1)
8. conical flask (1)
9. 10 cm<sup>3</sup> measuring cylinder (2)
10. 25 cm<sup>3</sup> measuring cylinder (1)
11. 50 cm<sup>3</sup> measuring cylinder (2)
12. 100 cm<sup>3</sup> beaker for deionised water (1)
13. 100 cm<sup>3</sup> beaker labelled "**for waste**" (1)
14. 200 cm<sup>3</sup> beaker labelled "**reaction mixture**" (1)
15. 200 cm<sup>3</sup> beaker for hot water bath (1)
16. 5 boiling tubes (labelled "**1**", "**2**", "**3**", "**4**", "**5**") supported in a boiling tube rack
17. **\*(7) dry and clean test-tubes and 1 boiling tube**
18. **\*clean plastic droppers (9)**
19. **\*plastic spatula (1)**
20. **\*paper towels (4)**
21. test-tube track (1)
22. Bunsen burner (1)
23. lighter (1)
24. glass rod (1)
25. delivery tube (1)
26. test-tube holder (1)
27. small white labels (10)
28. wash bottle containing deionised water (1)
29. safety goggles (1)
30. white tile (1)
31. Stoppered organic waste bottle.
32. Latex gloves (to be made available on teachers' bench)
33. **Heat proof mat (wire gauze)**

\*Placed in Ziplock bag