Rewarding Learning

Centre Number

Candidate Number

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2017

Chemistry

Assessment Unit AS 3

assessing
Module 3: Practical Examination

Practical Booklet A

[AC133]

AC133

MONDAY 8 MAY, MORNING

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page or on blank pages.
Complete in black ink only. **Do not write with a gel pen.**
Answer **both** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 24.
Question 1 is a practical exercise worth 10 marks.
Question 2 is a practical exercise worth 14 marks.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
A Periodic Table of Elements (including some data) is provided.
You may not have access to notes, textbooks and other material to assist you.
Safety glasses should be worn at all times and care should be taken during this practical examination.

10744

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1 Titration

(a) You are required to carry out an acid-base titration.

You are provided with:

a solution of an alkali
0.1 mol dm^{-3} hydrochloric acid
phenolphthalein indicator

- Rinse out a burette with the 0.1 mol dm^{-3} hydrochloric acid.
- Fill the burette with the 0.1 mol dm^{-3} hydrochloric acid.
- Rinse out a pipette with the alkali.
- Transfer 25.0 cm^3 of the alkali into a conical flask.
- Add three drops of phenolphthalein to the conical flask and titrate until the end point is reached.

Present your results in a suitable table and calculate the average titre.

[8]

(b) Give the colour change at the end point.

From _____ to _____ [2]

[Turn over

2 Observation

You are provided with solid **A**, solution **B** and liquid **C**. Carry out the tests and record your observations in the table below.

(a) Tests on solid **A**.

Test	Observations
1 Describe the appearance of **A**.	[1]
2 Add a spatula measure of **A** to a test tube quarter filled with deionised water. Stopper and shake the test tube.	[1]
Add 3 drops of silver nitrate solution to the test tube.	[1]
Add 4 cm^3 of dilute ammonia solution to the test tube.	[2]
3 Dip a clean nichrome wire into deionised water, touch sample **A** with the wire, then hold it in a blue Bunsen flame.	[1]

(b) Tests on solution **B**.

Test	Observations
1 Describe the appearance of solution **B**.	[1]
2 Quarter fill a test tube with solution **B**. Add 5 drops of dilute ammonia solution. Shake the test tube gently.	[2]
Add 2 cm^3 of dilute ammonia solution. Stopper and shake the test tube.	[2]

[Turn over

(c) Tests on liquid **C**.

Test	Observations
Add 1 cm^3 of **C** to 1 cm^3 of deionised water in a test tube.	[1]
Add 2 cm^3 of potassium dichromate solution to the test tube followed by 2 cm^3 of dilute sulfuric acid. Warm the mixture in the hot water bath provided.	[2]

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Question Number	Marks	
	Examiner Mark	Remark
1		
2		
Total Marks		

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Periodic Table of the Elements

For the use of candidates taking

Advanced Subsidiary and Advanced Level
Chemistry Examinations

Copies must be free from notes or additions of any kind. No other type of data booklet or information sheet is authorised for use in the examinations.

gce A/AS examinations

chemistry (advanced)

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THE PERIODIC TABLE OF ELEMENTS

I	II										III	IV	V	VI	VII	0
						Group										
1 H Hydrogen 1																4 He Helium 2
7 Li Lithium 3	9 Be Beryllium 4										11 B Boron 5	12 C Carbon 6	14 N Nitrogen 7	16 O Oxygen 8	19 F Fluorine 9	20 Ne Neon 10
23 Na Sodium 11	24 Mg Magnesium 12										27 Al Aluminium 13	28 Si Silicon 14	31 P Phosphorus 15	32 S Sulfur 16	35.5 Cl Chlorine 17	40 Ar Argon 18
39 K Potassium 19	40 Ca Calcium 20	45 Sc Scandium 21	48 Ti Titanium 22	51 V Vanadium 23	52 Cr Chromium 24	55 Mn Manganese 25	56 Fe Iron 26	59 Co Cobalt 27	59 Ni Nickel 28	64 Cu Copper 29	65 Zn Zinc 30	70 Ga Gallium 31	73 Ge Germanium 32	75 As Arsenic 33	79 Se Selenium 34	80 Br Bromine 35	84 Kr Krypton 36
85 Rb Rubidium 37	88 Sr Strontium 38	89 Y Yttrium 39	91 Zr Zirconium 40	93 Nb Niobium 41	96 Mo Molybdenum 42	99 Tc Technetium 43	101 Ru Ruthenium 44	103 Rh Rhodium 45	106 Pd Palladium 46	108 Ag Silver 47	112 Cd Cadmium 48	115 In Indium 49	119 Sn Tin 50	122 Sb Antimony 51	128 Te Tellurium 52	127 I Iodine 53	131 Xe Xenon 54
133 Cs Caesium 55	137 Ba Barium 56	139 La* Lanthanum 57	178 Hf Hafnium 72	181 Ta Tantalum 73	184 W Tungsten 74	186 Re Rhenium 75	190 Os Osmium 76	192 Ir Iridium 77	195 Pt Platinum 78	197 Au Gold 79	201 Hg Mercury 80	204 Tl Thallium 81	207 Pb Lead 82	209 Bi Bismuth 83	210 Po Polonium 84	210 At Astatine 85	222 Rn Radon 86
223 Fr Francium 87	226 Ra Radium 88	227 Ac† Actinium 89														

One mole of any gas at 20 °C and a pressure of 1 atmosphere (10^5 Pa) occupies a volume of 24 dm^3.

Planck Constant = 6.63×10^{-34} Js

Gas Constant = 8.31 J mol^{-1} K^{-1}

Avogadro Constant = 6.02×10^{23} mol^{-1}

140 Ce Cerium 58	141 Pr Praseodymium 59	144 Nd Neodymium 60	147 Pm Promethium 61	150 Sm Samarium 62	152 Eu Europium 63	157 Gd Gadolinium 64	159 Tb Terbium 65	162 Dy Dysprosium 66	165 Ho Holmium 67	167 Er Erbium 68	169 Tm Thulium 69	173 Yb Ytterbium 70	175 Lu Lutetium 71
232 Th Thorium 90	231 Pa Protactinium 91	238 U Uranium 92	237 Np Neptunium 93	242 Pu Plutonium 94	243 Am Americium 95	247 Cm Curium 96	245 Bk Berkelium 97	251 Cf Californium 98	254 Es Einsteinium 99	253 Fm Fermium 100	256 Md Mendelevium 101	254 No Nobelium 102	257 Lr Lawrencium 103

* 58–71 Lanthanum series

† 90–103 Actinium series

a / b x

a = relative atomic mass (approx.)

x = atomic symbol

b = atomic number