AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA | DEPARTMENT OF EDUCATION AND SCIENCE

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Marking Scheme — *Leaving Certificate Examination, 2001*

Physics and Chemistry — *Higher Level*

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Marking Scheme

Introduction

In considering this marking scheme the following points should be noted.

1. Words or expressions separated by a solidus, /, are alternative answers which are equally acceptable for the award of the assigned mark.

2. Words or expressions in round brackets, ( ), are alternatives to parts of an acceptable answer.

3. In some instances acceptable partial answers are given in square brackets, [ ], after the full answer to the particular item. In such cases, the marks indicated within the brackets cannot be awarded in addition to any marks already awarded for the item.

4. Where parts of an answer are assigned separate marks, alternatives from one part must correspond to alternatives from the other part(s) to merit the award of the marks assigned to both (all) parts.

5. The descriptions, methods and definitions in the scheme are not exhaustive and alternative valid answers are acceptable.

6. The detail required in any answer is determined by the context and manner in which the question is asked and by the number of marks assigned to the item in the examination paper. In any instance, therefore, the detail required may vary from year to year.

Outline Marking Scheme

SECTION I – PHYSICS

Any three questions

1. Any eleven of the following items (a), (b), (c), etc.
   (a) 2×3 (b) 2×3 (c) 2×3 (d) 6 (e) 2×3 (f) 6 (g) 2×3 (h) 2×3
   (i) 2×3 (j) 2×3 (k) 2×3 (l) 2×3 (m) 2×3 (n) 2×3 (o) 2×3

2. State 2×3 Define 4×3 Draw 4×3 Hence 3 × 3

   Describe 5×3 Calculate 4×3

3. State 4×3 Distinguish 2×3 Describe 5×3 State 3

   Find 4×3 State 3 Use 4×3 Describe 3

4. (a) State 2×3 Describe 6×3 Calculate 4×3

   (b) Explain 2×3 State 2×3 How 2×3 Calculate 4×3

5. (a) Describe 5×3 Calculate 4×3 Explain 2×3

   (b) State 4×3 Name 3×3 Give 2×3 Sketch 2×3

6. ***Any two of the following parts***

   (a) Describe 6×3 State 3 Calculate 4×3

   (b) Explain 4×3 Calculate 5×3 How 2×3

   (c) Define 4×3 State 4×3 Calculate 3×3

   (d) State 2×3 Calculate 7×3 Give 3 State 3

SECTION II - CHEMISTRY

Any three questions

7. Any eleven of the following items (a), (b), (c), etc.
(a) 2×3 (b) 2×3 (c) 2×3 (d) 2×3 (e) 2×3 (f) 2×3 (g) 2×3 (h) 2×3
(i) 2×3 (j) 2×3 (k) 2×3 (l) 2×3 (m) 2×3 (n) 2×3 (o) 2×3

8. Define 6×3 Account 8×3 Write 4×3 Calculate 4×3

9. (a) Define 4×3 Calculate 6×3 State 3 Give 3

(b) Place 2×3 Write 6×3 Explain 2×3

10. (a) Explain 2×3 Explain 4×3 Give 2×3

(b) What 2×3 Calculate 5×3

(c) Write 2×3 Calculate 3×3 How 2×3

11. Explain 4×3 (i) State 6 Write 2×3 Give 6 (ii) Identify 2×3
Write 2×3 (iii) Outline 2×3 (iv) State 3×3 (v) Write 3×3

12. ***Any three of the following parts***

(a) State 4×3 Draw 2×3 Name 2×2

(b) Give (i) 2×2 (ii) 2×3 (iii) 2×3 Write 2×3

(c) Outline 2×3 Sketch and State 8×2

(d) Name 2×3 Write 2×3 Name 2×3 Give 2×2

NOTE: All questions will carry the same number of marks.
However, one additional mark will be given to each of the first two questions in each Section for which the highest marks are obtained by the candidate.

SECTION I - PHYSICS

QUESTION 1

Any eleven parts

(a) gravitational force / force of attraction ... 3
exerted on a body / between a body and the Earth ... 3

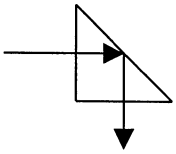
[$W = mg$ ... 2×3]

(b) KE = ½ mv^2 / $24 = ½ (0.12) v^2$ ... 3
$v = 20$ ... 3

(c) K = °C ... 3
+ 273 ... 3
[correct example ...3]

(d) pressure ... 6

(e) reflection through 90° ... 3
passes **normally** through the second side ... 3



(f) wide field of view / erect image ... 6

(g) solenoid ... 3
correct field pattern ... 3

(h) diagram showing only positive charges ... 3
concentration of charge greatest at pointed end ... 3

QUESTION 1 - continued

(i) (i) radio waves (ii) X-rays ... 2×3

(j) $R = R_1 + R_2$ / $R = 2 + 3$ / $R = 5$ ... 3

$R = \frac{20}{9}$ / 2.2 ... 3

(k) 2 axes labelled ... 3

straight line graph through the origin ... 3

(l) $E = hf$ / $6.4 \times 10^{-19} = (6.6 \times 10^{-34}) \times f$ ... 3

$f = (9.6 - 9.7) \times 10^{14}$ ... 3

(m) $W = RI^2t$ / $W = (0.1)(13)^2(0.2)$ ... 3

$W = 3.3 - 3.4$ ... 3

(n) cancer treatment / cracks in metals / tracers / etc. **any two** ... 2×3

(o) time taken for half / time taken for the activity (mass) of the sample ... 3

nuclei (atoms) present to decay / to decrease to half its original value ... 3

QUESTION 2

State (2×3) *(Newton's 2nd law)*

rate of change of momentum / $mv - mu$ / ma ... 3
$\propto$ (=) the force / $\propto$ (=) F / $\propto$ (=) F ... 3

Define (i) (*acceleration*) **(2×3)**

change of velocity ... 3
with respect to time ... 3

[$a = \frac{v-u}{t}$ ... 3 explain the terms ... 3]

(ii) (*the newton)* **(2×3)**

the force which gives a mass of 1 kg (unit mass) ... 3
an acceleration of 1 m s^{-2} (unit acceleration) ... 3

[N = kg m/s^{-2} ... 3]

Draw (4×3)

label axes correctly – F and a ... 3
plot 5 - 7 points correctly ... 3
one relevant straight line ... 3
good distribution (best fit) ... 3
[if graph paper is not used – deduct 3]

Hence (3×3)

equation for the slope ... 3
two points on the line ... 3
mass (0.35 – 0.37) kg ... 3
incorrect / no units (–2)
[using $F = ma$ and one point on a line which passes through the origin ... 3×3]
[any method using averages ... 3 only]

Describe (5×3)

App: timing device / trolley / means of applying a force **any two**... 3

Method: apparatus arranged correctly ... 3

explain how to measure velocity ($v = \frac{s}{t}$) ... 3

calculation of t (s) and F ... 3
calculation of a (equation) ... 3

Calculate (4×3)

$s = ut + ½ at^2$ ... 3
$0.9 = 0 + ½(1.5)t^2$ ... 3
$t^2 = 1.2$ ... 3
t = 1.1 s ... 3
incorrect / no units (–2)

QUESTION 3

State (4×3) *(laws of refraction)*

I	incident ray, refracted ray and normal	...	3
	are in the same plane	...	3
II	$\sin i \propto / \sin i =$	...	3
	$\sin r$ / constant × $\sin r$	...	3

Distinguish (2×3)

(real image)	formed by the **actual** intersection of light rays / can be located on a screen	...	3
(virtual image)	formed by the **apparent** intersection of light rays / can not be formed on a screen	...	3

Describe (5×3)

App:	converging lens / lamp box (pins) / screen (plane mirror) **any two**	...	3
Method:	correct arrangement **shown** - must contain **one** label	...	3
	adjust until a sharp (clear) (good) image is formed / position of no parallax is obtained	...	3
	measure correct u and v / distance from the pin to the centre of the lens	...	3
	calculate f: $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ / distance measured is the focal length	...	3

State (3) narrow beam of light / repeat for other values of u, etc. / repeat and take an average **any one** ... 3

QUESTION 3 - continued

Find (4×3)

$u = 4v \quad / \quad v = \frac{u}{4}$ ... 3

$\frac{1}{f} = \frac{1}{u} + \frac{1}{v} \quad / \quad -\frac{1}{20} = \frac{1}{4v} - \frac{1}{v}$ ... 3

$v = 15$ ... 3

$u = 60$ cm ... 3

incorrect / no units (–2)

State (3) virtual / erect / diminished **any one** ... 3

Use (4×3) two converging lenses
parallel rays, F_O and F_E coincide
I_1 at F_O and F_E
I_2 at infinity ... 4×3

Describe(3) inverted / virtual / diminished **any one** ... 3

QUESTION 4

(a) **State (2×3)** *(Boyle's law)*

fixed mass of gas / at constant temperature

pressure (p) / inversely proportional to volume ($\propto \frac{1}{V}$) ... 2×3

[**any two** / $pV = k$ ... 3]

Describe (6×3)

App: closed tube, flexible tubing, open tube, mercury /
closed tube, liquid, pump, pressure gauge /
cylinder, piston, scale, pressure gauge ... 2×3

[**any two** ... 3]

Method: correct arrangement shown (described) ... 3

set pressure and read volume ... 3

repeat for a number of values of pressure
and volume ... 3

Result: pV = constant /
graph of p vs $\frac{1}{V}$ straight line through the origin ... 3

Calculate (4×3)

(i) $p_1V_1 = p_2V_2$ ... 3

$(1 \times 10^5)\ V_1 = (2 \times 10^6)(0.04)$ ... 3

$V_1 = 0.8\ m^3$ ... 3

incorrect / no units (–2)

(ii) *volume escaped* = 0.8 - 0.04 / = 0.76 ... 3

(b) **Explain(2×3)** *(ideal gas)*

obeys Boyle's law (gas laws) / satisfies KT assumptions	...	3
always / exactly / at all temperatures and pressures	...	3

State (2×3) large number of molecules /
rapid (random) (straight line) motion /
no forces (elastic collisions)
collisions of negligible duration (time between collisions very much greater than duration of collisions) /
negligible dimension (volume) **any two** ... 2×3

How (2×3)

average kinetic energy of the molecules	...	3
proportional to temperature on the Kelvin (Absolute) scale	...	3

Calculate (4×3)

$PV = nRT$	...	3
$(1 \times 10^5)(0.02) = n(8.3)(300)$	...	2×3
[any two correct ... 3]		
$n = 0.8$	...	3

QUESTION 5

(a)Describe (5×3)

App: battery (power supply) / magnet /
aluminium foil (moveable conductor) **any two** ... 3

Method: correct arrangement ... 3
close the switch (complete the circuit) ... 3
aluminium (conductor) moves ... 3

Conclusion: current-carrying conductor experiences a force ... 3

Calculate (4×3) $R_s I_s = R_g I_g$ ... 3

$R_s (5.996) = (50)(4 \times 10^{-3})$ ... 2×3

$R_s = 0.033\ \Omega$ ... 3
incorrect / no units (–2)

Explain(2×3) so that it doesn't reduce ... 3
the current 3

(b) State (4×3) *(Faradays law)*
induced emf (current) $\propto$ ... 3
rate of change of flux ... 3

(Lenz's law) direction of the induced current ... 3
opposes the change causing it ... 3

Name (3×3) **A** = coil ... 3
B = brush ... 3
C = slip ring ... 3

Give (2×3)

A – cuts magnetic field lines / carries the current
B – allows current to flow / takes current from the coil / connects coil to the circuit
C – allows a.c. to flow / connects coil to brush
any two ... 2×3

Sketch (2×3) labelled axes – V and t ... 3
sinusoidal graph ... 3

QUESTION 6

Any two parts

(a)Describe (6×3)

App:	2 trolleys / timing device / means of joining (separating) **any two**	...	3
Method:	correct arrangement shown (stated)	...	3
	measure the mass of both trolleys	...	3
	give push (release the spring)	...	3
	explain how to measure velocity	...	3
	explain how the result verifies P.C.M. / $m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2$	...	3

State (3) repeat with trolleys of different mass
average the distance over 5/10 dots
runway tilted to overcome friction
ignore dots at the start (near point of impact)

any one appropriate to the method used ... 3

Calculate (4×3)

$m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2$ ... 3

$(5000)(10) + (3000)(-2) = (5000 + 3000)v$ ... 2×3

$v = 5.5 \text{ m s}^{-1}$ ... 3

incorrect / no units (–2)

(b) Explain(4×3)

(constructive) waves from two sources meet and the amplitude of the resultant wave is greater than the amplitude of the individual waves ... 3

diagram ... 3

(destructive) waves from two sources meet and the amplitude of the resulting wave is less than the larger amplitude of the individual waves ... 3

diagram ... 3

Calculate(5×3) $n\lambda = \frac{sx}{D}$ / $n\lambda = s\sin\theta$ ... 3

conversion of λ and x ... 3

$$5(590\times10^{-9}) = \frac{s\times4.8\times10^{-3}}{0.8}$$ ... 2×3

$s = 4.9 \times 10^{-4}$ m ... 3
incorrect / no units (–2)

How (2×3) fringes (images) ... 3

farther apart ... 3

(c) Define(4×3)

(fission)(i)	large nucleus (atom) splits into two nuclei (atoms)	...	3
	with a release of energy / with a reduction in mass	...	3
(fusion)(ii)	combining of two light nuclei (atoms) to form one nucleus (atom)	...	3
	with the release of energy / with a reduction in mass	...	3

State (4×3)

(i)	(*atomic no.*) reduced by 2	...	3
	(*mass no.*) reduced by 4	...	3
(ii)	(*atomic no.*) increased by 1	...	3
	(*mass no.)* no change	...	3

Calculate(3×3)

	mass no. reduced by 12 and atomic no. reduced by 5	...	3
	3 alpha particles	...	3
	1 beta particle	...	3

(d) State (2×3)

common area /
distance between the plates /
permittivity / dielectric **any two** ... 2×3

Calculate (7×3)

(i) $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$ / $\frac{1}{C} = \frac{1}{5} + \frac{1}{6}$ ... 3

$\frac{1}{C} = \frac{11}{30}$ ... 3

$C = \frac{30}{11}$ μF / 2.73 μF / 2.73×10^{-6} F ... 3

incorrect / no units(–2)

(ii) $C = \frac{Q}{V}$ / $2.73 \times 10^{-6} = \frac{Q}{30}$ ... 3

$Q = 8.19 \times 10^{-5}$ C ... 3

incorrect / no units(–2)

(iii) $C = \frac{Q}{V}$ / $5 \times 10^{-6} = \frac{8.19 \times 10^{-5}}{V}$ ... 3

$V = 16.38$ V ... 3

incorrect / no units(–2)

Give (3)

Radio / rectifier / camera flask gun / etc. **any one** ... 3

State (3)

tune to a radio station / smooth the output /
cause a bulb to flash / store charge / etc.
any one appropriate to the example given ... 3

SECTION I I - CHEMISTRY

QUESTION 7

Any eleven parts

(a) molecular mass / mass of a substance ... 3

expressed in grams / which contains same no. of particles as there are in 12 g of carbon / which contains the Avogadro number of particle s ... 3

(b) iodine dry ice ... 2×3

(c) M_r $(CH_3)_2CO$ = 58 ... 3
%C = 62% ... 3

(d) the decomposition of a substance ... 3
water ... 3

(e) any correct element ... 3
two correct valencies ... 3

(f) example with polar bonds ... 3
non-polar molecule ... 3
[CO_2 / CH_4 / BF_3 / etc ... 2×3]

(g) O_2 = 32 g / sulphur dioxide ... 3
SO_2 ... 3

(h) silver mirror (Tollens) (ammoniacal silver nitrate) /
Fehling's **any one** ... 2×3

[silver nitrate only ... 3]
[Brady's / Baeyer's ... 3]

QUESTION 7 - continued

(i)	toluene (methyl benzene)	...	3
	correct structural formula – benzene ring + CH_3 group	...	3
(j)	sodium (barium) peroxide	...	3
	H_2SO_4	...	3
(k)	heat change when 1 mole of a substance (solute)	...	3
	is dissolved - in excess solvent (to form 1 litre of solution)	...	3
(l)	*oxidising agent* - **O_2**	...	3
	reducing agent - **Ca**	...	3
(m)	(i) any named indicator	...	3
	(ii) methyl orange (methyl red)	...	3
(n)	$MgSO_4$	...	3
	H_2	...	3
(o)	*exothermic* – heat given out	...	3
	endothermic – heat taken in	...	3

QUESTION 8

Define (6×3) (i) *(1^{st} I.E.)*

energy required to remove the first (most loosely bound) (outermost) electron ... 3

from a neutral (isolated) (gaseous) atom ... 3

(ii)*(atomic orbital)*

region (space) around the nucleus ... 3

where electrons are most likely to be found ... 3

(iii)*(relative atomic mass)*

mass of an atom ... 3

compared with $\frac{1}{12}$th of the mass of the C atom ... 3

Account (8×3)

(i) *(Be to B)*

Be has a full s-subshell / B has one electron in p sub-shell ... 3

extra stability / more difficult (easier) to remove the electron ... 3

(He to Ne)

increase in atomic radius ... 3

screening effect of inner electrons ... 3

(N to O)

N has a half-filled p-subshell ... 3

extra stability / more difficult to remove the electron ... 3

(ii) *(B to N)*

decrease in atomic radius ... 3

increase in positive nuclear charge ... 3

Write (4×3) (i) *(Ge)* $1s^2\ 2s^2\ 2p^6$ ... 3

$3s^2\ 3p^6\ 4s^2$ ... 3

$3d^{10}\ 4p^2$ ... 3

(ii) *(F)* $1s^2\ 2s^2\ 2p^6$ ... 3

Calculate (4×3) 24.1 × 206 / 4964.6 ... 3

23.1 × 207 / 4781.7 and 52.8 × 208 / 10982.4 ... 3

Total 20728.7 ... 3

Relative atomic mass = 207 ... 3

QUESTION 9

(a) Define (4×3) (i) *(heat of reaction)*

heat change ... 3

when a reaction takes place according to a given chemical equation / when the number of moles indicted in the balanced equation react completely ... 3

(ii) *(heat of formation)*

heat change when 1 mole of a compound ... 3
is formed from its elements ... 3

Calculate (6×3)

CH_4	$\rightarrow$	$C + 2H_2$	$\Delta H = 74.9$ kJ mol^{-1}	...	2×3
$C + 2Cl_2$	$\rightarrow$	CCl_4	$\Delta H = -139$ kJ mol^{-1}	...	3
$2H_2 + 2Cl_2$	$\rightarrow$	4HCl	$\Delta H = -369.2$ kJ mol^{-1}	...	2×3
$CH_4 + 4Cl_2$	$\rightarrow$	$CCl_4 + 4HCl$	$\Delta H = -433.3$ kJ mol^{-1}	...	3

State(3) uv / sunlight / high temperature / 250 – 300 °C **any one** ... 3

Give (3) solvent / degreasing / dry cleaning / etc. **any one** ... 3

(b) Place (2×3) potassium calcium copper silver ... 2×3
[3 in correct order / reverse order ... 3]

Explain(6×3)

(i) potassium reacts vigorously ... 3
calcium reacts readily ... 3
copper and silver – no reaction ... 3

(ii) potassium reacts violently ... 3
calcium is very reactive ... 3
copper and silver – no reaction ... 3
[K is more reactive than Ca with water and hydrochloric acid ...4×3]

Explain(2×3)

zinc becomes coated (turns brown) / zinc donates electrons / zinc / Zn + Cu^{2+} ... 3
with copper / to copper ions / displaces copper / Zn^{2+} + Cu ... 3

QUESTION 10

(a) Explain(2×3) two species / acid and a base ... 3
(conj. pair) which differ by a proton ... 3

Explain(4×3)
(S.A.) it donates protons readily ... 3
is largely dissociated in solution / has a weak conjugate base ... 3

(W.A.) it does not donate protons readily ... 3
is slightly dissociated in solution / has a strong conjugate base ... 3

Give (2×3)
(i) SO_4^{2-} ... 3
(ii) OH^- ... 3

(b) What (2×3) negative log to base 10 / $-\log_{10}$ ... 3
hydrogen ion concentration / $[H^+]$ ... 3

Calculate (5×3)
(i) 0.001 ... 3
$[H^+] = 0.002$ ... 3
pH = 2.7 ... 3

(ii) pOH = 0.48 ... 3
pH = 13.5 ... 3

(c) Write (2×3)
$Ca(OH)_2 + 2HCl$ / $Ca(OH)_2 + HCl \rightarrow CaCl_2 + H_2O$ ... 3

$CaCl_2 + 2H_2O$ / $Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O$ ... 3

Calculate (3×3) $\frac{M_1V_1}{n_1} = \frac{M_2V_2}{n_2}$ ... 3

$\frac{0.05 \times 19.6}{2} = \frac{M_2 \times 25}{1}$ ... 3

M_2 = 0.0196 M (moles/litre) ... 3
incorrect / no units(–2)

How (2×3) M_r of $Ca(OH)_2$ = 74 ... 3
conc. (g/litre) = 1.45 ... 3

QUESTION 11

Explain(4×3) *(i) (homologous series)*

successive members differ / group of compounds ... 3

by CH_2 / which have the same general formula ... 3

(ii)(functional group)

atom (group of atoms) which determine / reactive part ... 3

the chemical properties / of a molecule ... 3

[correct example ... 3]

(i) State (6) alkynes ... 6

Write (2×3) H–C≡C–H ... 6

[–C≡C– / H–C–(=)C–H ... 3]

Give (6) oxy-acetylene torches etc. ... 6

[cutting / welding only ... 3]

(ii) Identify(2×3) X = water ... 3

Y = calcium dicarbide (carbide) ... 3

Write (2×3) $CaC_2 + H_2O$ ... 3

$C_2H_2 + Ca(OH)_2$ ... 3

(iii) Outline (2×3) decolourises ... 3

bromine water (bromine in 1,1,1–trichloroethane) / potassium permanganate ... 3

(iv) State (3×3) sulphuric acid ... 3

heat / 60 °C ... 3

$HgSO_4$ ... 3

[acid hydrolysis ... 2×3; hydrolysis / temp. / catalyst ... 3]

(v) Write (3×3)

CH_3CHO 3

$C_6H_5NHNH_2$ ... 3

$CH_3CH=NNHC_6H_5 / H_2O$ ... 3

[phenylhydrazone ... 3]

QUESTION 12

Answer any three parts

(a) State (4×3) *(Faraday's law)*

I	mass of element liberated (deposited)	...	3
	$\propto$ charge ($I \times t$) (quantity of electricity) / = zIt / = zQ	...	3
II	mass deposited(liberated) by equal quantities of charge (electricity)	...	3
	$\propto$ chemical equivalents / $\propto \frac{\text{relative atomic mass}}{\text{valency}}$	...	3
Draw (2×3)	electrodes, electrolyte, battery	...	3
	correct arrangement and one label	...	3
Name (2×2)	lead	...	2
	bromine	...	2

(b) Give (i) 2×2

	e.g. sodium hydroxide / NaOH	...	3
	hydrogen / H_2	...	3
(ii)(2×3)	e.g. calcium hydroxide / $Ca(OH)_2$	...	3
	hydrogen / H_2	...	3
(iii) (2×3)			
	phosphorous acid / H_3PO_3 (phosphoric acid / H_3PO_4)	...	3
	hydrochloric acid / HCl	...	3
Write (2×3)			
	e.g. $CaH_2 + H_2O$	...	2
	$Ca(OH)_2 + H_2$	...	2

This equation must correspond to the example in (ii)

QUESTION 12 - continued

(c) Outline (2×3)

pairs of electrons repel each other ... 3

lp:lp > lp : bp > bp : bp ... 3

Sketch and State (8×2)

	BeH_2	BF_3	CH_4
Shape	Linear	Triangular planar	tetrahedral
No. of bond pairs	2	3	4
No. of lone pairs	0	0	0
Bond angle	180	120	109

any two molecules ... 8×2

(d) (i)Name (2×3)

A = phenol (hydroxy benzene) ... 3

B = benzoic acid (phenylmethanoic acid) ... 3

(ii) Write (2×3)

C_6H_5OH + NaOH / C_6H_5COOH + NaOH ... 3

C_6H_5ONa + H_2O / C_6H_5COONa + H_2O ... 3

Name (2×3)

sodium phenoxide (sodium benzoate) ... 3

water ... 3

(iii) Give (2×2)

(phenol) manufacture of plastics and resins / antiseptic / etc. **any one** ... 2

(acid) preservative / antiseptic / etc. **any one** ... 2