

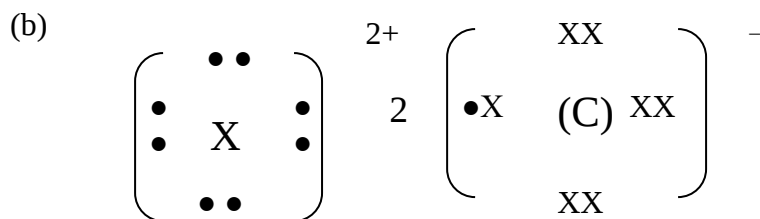
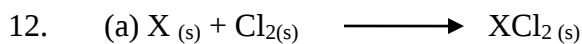
END OF YEAR 2025 EXAM (OCTOBER) TIME: 2 HOURS

MARKING SCHEME

CHEMISTRY PAPER 1 FORM 3

1. 
2. effervescence
AlCl₃ hydrolysis in H₂O to produce H⁺
3. C, A, B
4. Measure 10cm³ of HNO₃ into a beaker .
Add PbCO₃ until effervescence stops
Filter to obtain (Pb(NO₃) filtrate. To the filtrate add 10cm³ of HCl.
Filter the mixture to obtain PbCl₂ residue. Wash and dry the residue.
5. Mass of O₂ = 3.02 – 2.3 = 0.62g
Elements Sn O
Mass 2.3 6.62
RAM 119 16
Moles 2.3/119 = 0.019 0.62/16 = 0.039
Mole ratio = $\frac{0.019}{0.019} = 1$ $\frac{0.039}{0.019} = 2$
EF SnO₂
6. To mass reacted = 9.93g + 2.84g = 12.77g
Total RFM of reactants = 143 + 331 = 474g
RFM of NaNO₃ = 85 x 2 = 170
474g = 170g
 $12.77g = \frac{12.77g \times 170g}{474g} = 4.58g$ of NaNO₃
7. (a) $2Cl^-_{(aq)} \longrightarrow Cl_{2(s)} + 2e^-$
(b) Changes to Re.
(c) H⁺ are discharged leaving OH⁻ which combine with Na⁺ to form basic NaOH.
8. (a) Sodium Propanoate
(b) Ethane undergoes substitution reaction with bromine forming bromoethane
9. $2CH_3CH_3(g) + 7O_2 \longrightarrow 4CO_{2(g)} + 6H_2O_{(g)}$
2 volume 7 volume 4 Volume 6 volume
Volume of CO_{2(g)}
2 volume = 15cm³
4 volume = $\frac{4 \text{ volume} \times 15cm^3}{2 \text{ volume}} = 30cm^3$
Volume of H₂O_(g)
2 volume = 15cm³
6 volume = $\frac{6 \text{ vol.} \times 15cm^3}{2 \text{ volume}} = 45cm^3$ of H₂O_(g)
10. (a) 50% HNO₃
(b) $Cu_{(s)} + HNO_{3(aq)} \longrightarrow Cu(NO_3)_{2(aq)} + H_2O_{(l)} + NO_{(g)}$
(c) It reduced NO to N₂ and oxygen and continues to burn in O₂ forming the oxide
11. (a) I conc. H₂SO₄ is a strong oxidizing agent which is reduced to SO₂

(b) Fumigate green houses



13. (i) A- Graphite B-Diamond
(ii) It's layers slide over each other making it slippery
(iii) For making jewels, drilling, bits e.t.c

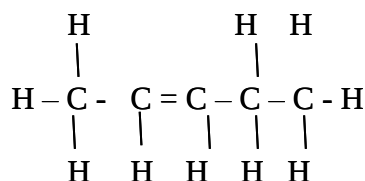
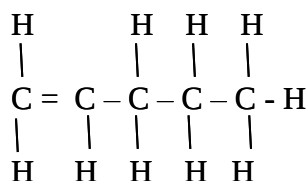
14. $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$ $T_2 = \frac{P_2 V_2}{P_1 V_1} = \frac{0.15 \text{ atm} \times 100 \text{ cm}^3 \times 500 \text{ K}}{400 \text{ cm}^3 \times 1 \text{ atm}} = 62.5 \text{ K}$

15. (a) CO_2
(b) $2NaHCO_{3(s)} \xrightarrow{\text{Heat}} Na_2CO_{3(s)} + CO_{2(g)} + H_2O_{(g)}$
(c) making glass, softening hard water

16. (a) $CaC_{2(s)} + 2H_2O \longrightarrow C_2H_{2(s)} + Ca(OH)_{(aq)}$
(b) Ethyne decolorize bromine water while ethane do not
(c) Together with O_2 it produced oxycetylene flame used in welding and cutting metals.

17. molarity of $Na_2CO_{3(aq)}$ $Na_2CO_{3(aq)} + 2HNO_{3(aq)} \longrightarrow 2NaNO_{3(aq)} + H_2O_{(l)}$
 $\frac{0.25 \times 20 \times 1}{2 \times 25} = 0.01 \text{ M } Na_2CO_3$
 Econc. g/l = $0.01 \times 106 = 1.06 \text{ g/l}$
 Mass
 $1.06 \text{ g} = 100 \text{ cm}^3$
 $\frac{250 \times 1.06}{1000} = 250 \text{ cm}^3$
 $\frac{250 \times 1.06}{1000} = 0.265 \text{ g}$

18. (a) 2,4 – dimethyl/pentane (b) 5-bromo, 3-chloro – pent -2-ene
(b)



19. (a) $Cu^{2+}_{(aq)} + 2OH_{(aq)} \longrightarrow Cu(OH)_{2(s)}$
(b) $Cu(OH)_2 + 4NH_{3(aq)} \longrightarrow [Cu(NH_3)_4]^{2+} + 2OH_{(aq)}$

20. -Produce a lot of heat
-Do not produce soot

21. (a) Bubbles of a gas
(b) Volume of water in the test tube reduces

22. (a) (i) C (ii) A

(b) Conduct using delocalized electrons

23. (a) N_2O
 (b) $\text{NH}_4\text{NO}_3 \xrightarrow{\text{Heat}} 2\text{O}_{(\text{g})} + 2\text{H}_2\text{O}_{(\text{l})}$
25. Do not react with most chemicals
 - transparent
26. Electroplating
 - Greasing
27. (a) MnO_2 and H_2O_2 , KMnO_4 , Na_2O_2 and H_2O
 (b) Together with acetylene produce oxyacetylene flame used in welding
28. (a) Iron pyrite, copper pyrite
 (b) (i) Purple KMnO_4 is decolourized to Mn^{2+}
 (ii) Reducing agent.
 (c) Raw material in contact process

