Reaction Drill
GROUP-14

Complete and balance the following reactions.

1.	$C + SiO_2 \xrightarrow{heat}$
	$SiC + CO \xrightarrow{2500^\circ C}$
g	$SiO_2 + Fe + C \xrightarrow{heat}$
	$SiO_2 + C \xrightarrow{heat}$
	$Si + C \xrightarrow{heat}$
	$SiO_2 + SiC \xrightarrow{heat}$
	$Si + Cl_2 \longrightarrow$
	$SiCl_4 + Mg \longrightarrow$
2.	$PbS + O_2 \longrightarrow$
	$PbO \xrightarrow{+C}$
	$PbS \xrightarrow[air]{heat\ in} \_\_\_\_\_ \xrightarrow[absence\ of\ air]{heat\ in}$
3.bm	$E + O_2 \xrightarrow{\Delta} EO_2$ E = ? $Pb + O_2 \xrightarrow{\Delta}$ $PbO + O_2 \underset{470^\circ C}{\overset{400^\circ C}{\rightleftharpoons}}$
4.bm	$E + S \xrightarrow{\Delta} ES_2$ E = ? $Pb + S \xrightarrow{\Delta}$
5.bm	$E + X_2 \xrightarrow{\Delta} EX_4$ E = ? $Pb + X_2 \xrightarrow{\Delta} PbX_2$ X = ?

6.	C (gr or dia) + H_2O (steam) ⟶ C (coke) + H_2O (steam) ⟶
	Si + H_2O (steam) ⟶
	Ge + H_2O (steam) ⟶
	Sn + 2 H_2O (steam) ⟶
	Pb + H_2O (steam) ⟶
7.	C or Si or Ge + dil.HNO_3 ⟶ C(diamond) + HNO_3 (hot, con) ⟶ C(graphite) + HNO_3 (hot, con) ⟶ C(graphite) + $KClO_4$ $\xrightarrow{HNO_3/H_2SO_4}$ C + H_2SO_4 (hot, con) ⟶ C + dil.HCl ⟶
8.	Si + dil.HNO_3 ⟶ Si + HF/HNO_3(con) ⟶ Si + dil.HCl ⟶
9.	Ge + dil.HNO_3 ⟶ Ge + dil.HCl ⟶ Ge + H_2SO_4 or HNO_3 (hot, conc) ⟶
10. bm	Sn + HNO_3 (cold, dil) ⟶ Sn + HNO_3 (con) ⟶ Sn + HCl (dil) ⟶ Sn + HCl (con, hot) ⟶ Sn + H_2SO_4 (dil) ⟶ Sn + 4H_2SO_4 (conc) ⟶
11.	Pb + HNO_3 (dil) ⟶ Pb + HNO_3 (con) ⟶ Pb + CH_3COOH ⟶ Pb + H_2SO_4 (dil) ⟶ Pb + 2H_2SO_4 (conc, hot or cold) ⟶

	$Pb + HCl\ (dil) \longrightarrow$ $Pb + HCl\ (con,\ cold) \longrightarrow$ $Pb + HCl\ (con,\ hot) \longrightarrow$ $Pb + HCl\ (con,\ excess) \xrightarrow{\Delta}$
12. bm	$C + NaOH\ (hot) \longrightarrow$ No reaction $2C + 6NaOH \xrightarrow{\text{intense heating}} 2Na + 2Na_2CO_3 + 3H_2$
13. bm	$Si + NaOH\ (aq,\ cold) \longrightarrow$ $Si + 4OH^- \longrightarrow$ *Or* $Si + 2OH^- + H_2O \longrightarrow$
14.g	$M + 2NaOH(con) + 5H_2O \longrightarrow Na_2[M(OH)_6]$ or $Na_2M_2O_3.3H_2O + 2H_2$ M = ?
15.	$CaO + C \xrightarrow{\Delta}$
	$CaC_2 + 2H_2O \longrightarrow$
	$CaC_2 + N_2 \xrightarrow{1100^\circ C}$
16.	$SiC + NaOH + O_2 \longrightarrow$
13.	$H.COOH + H_2SO_4 \longrightarrow$
	$PdCl_2 + CO + H_2O \longrightarrow$ $CO + I_2O_5 \longrightarrow$
	$C + H_2O \xrightarrow{\text{red heat}}$
	$C + \underbrace{O_2 + 4N_2}_{\text{air}} \longrightarrow \_\_\_\_\_ \xrightarrow{+C} \_\_\_\_\_ (\text{Producer gas})$
	$Fe_2O_3 + CO \xrightarrow{\text{blast furnace}}$ $CuO + CO \longrightarrow$
	$Ni + CO \xrightarrow{28^\circ C}$ $Fe + CO \xrightarrow{200^\circ C \text{ under pressure}}$ $Cr + CO \longrightarrow$ $Fe(CO)_5 \xrightarrow{\text{Photolysis}}$ $CrCl_6 + Fe(CO)_5 \xrightarrow{\text{heat}}$
	$CO + S \longrightarrow$ $CO + Cl_2 \longrightarrow$
	$COCl_2 + H_2O \longrightarrow$
14.	$Na_2CO_3 + CO_2 + H_2O \underset{\text{hot}}{\overset{\text{cool}}{\rightleftharpoons}}$

	$CO_2 + NH_3 \xrightarrow[\text{pressure}]{180^\circ C}$
	$Ca(OH)_2 + CO_2 \longrightarrow$
	$CaCO_3 + CO_2 + H_2O \longrightarrow$
	$6CO_2 + 6H_2O \xrightarrow{\text{sun light}}$
	$C_6H_{12}O_6 + 6O_2 \longrightarrow$
15.	$\underset{\text{Malonic acid}}{HOOC.CH_2.COOH} \xrightarrow[150^\circ C]{P_4O_{10}}$
	$C_3O_2 + 2HCl \longrightarrow$
	$C_3O_2 + 2NH_3 \longrightarrow$
16.	$CH_4 + 4S \xrightarrow{600^\circ C}$
	$CS_2 + NaOH \longrightarrow$
	$CS_2 + 2NH_3 \longrightarrow$
17.	$SiO_2 + Si \longrightarrow$
	$SiO_2 + NaOH \longrightarrow$
	$SiO_2 + Na_2SO_4 \longrightarrow$
	$SiO_2 + Na_2CO_3 \longrightarrow$
	$SiO_2 + 4HF \longrightarrow$ $SiO_2 + 6HF \longrightarrow$ $SiF_4 + 4H_2O \longrightarrow$
	$SiO_2 + 2F_2 \longrightarrow$
18.	$SiCl_4 + CH_3MgCl \longrightarrow$ $CH_3SiCl_3 + CH_3MgCl \longrightarrow$ $(CH_3)_2 SiCl_2 + CH_2MgCl \longrightarrow$ $(CH_3)_3 SiCl + CH_3MgCl \longrightarrow$
19.	$LiR + SiCl_4 \longrightarrow$
20.	$Si + 2CH_3Cl \xrightarrow{\text{Cu catalyst } 280-300^\circ C} (CH_3)_2 SiCl_2$
	$R_2SiCl_2 + H_2O \longrightarrow [R_2SiO]_n$
21.	$2Mg + Si \xrightarrow{\text{heat in absence of air}}$ $Mg_2Si + H_2SO_4 \longrightarrow$
	$Na_2Si + H_2O \longrightarrow$
g	$SiCl_4 + Li[AlCl_4] \longrightarrow$

	$GeCl_4 + Li[AlH_4] \xrightarrow{\text{dry ether}}$
22.	$NaNH_2 + C \xrightarrow{750^\circ C}$
	$NaCN + H_2SO_4 \longrightarrow$
	$Ca(CN)_2 + H_2SO_4 \longrightarrow$
	$CH_4 + NH_3 \longrightarrow$ $2CH_4 + 2NH_3 + 3O_2 \longrightarrow$
	$Ag + NaCN + H_2O + O_2 \longrightarrow$ $Au + NaCN + H_2O + O_2 \longrightarrow$
	$Cu^{2+} + CN^- \longrightarrow$ _____ $\xrightarrow{+CN^-}$
	$CuCN + FeCl_3 \xrightarrow[\Delta]{H_2O}$
g	$(CN)_2 + 2OH^- \longrightarrow$
g	$Na + NH_3 + C \xrightarrow{750^\circ C}$
23.	$SiF_4 + 2F^- \longrightarrow$ $SnCl_4 + 2Cl^- \longrightarrow$
24.	$CO_2 + SF_4 \longrightarrow$ $SiC + 2F_2 \longrightarrow$ $CF_4Cl_2 + F_2 \longrightarrow$
25.	$CHCl_3 + HF \xrightarrow{SbFCl_4 \text{ catalyst}}$ _____ $\xrightarrow{\text{heat}}$ _____ $C_2F_4 \xrightarrow{\text{pressure}}$
25.	$CS_2 + 3Cl_2 \xrightarrow{FeCl_3 \text{ catalyst } 30^\circ C}$ $CS_2 + 2S_2Cl_2 \xrightarrow{FeCl_3 \text{ catalyst } 60^\circ C}$
	$CCl_4 + 2HF \xrightarrow[SbCl_5 \text{ catalyst}]{\text{anhydrous conditions}}$
	$CCl_4 + H_2O \xrightarrow[\text{stream}]{\textit{sup}\text{erheated}}$
26.	$SiF_4 + 8OH^- \longrightarrow$
	$SiCl_4 + 4H_2O \longrightarrow$
	$SiCl_4 + Si \longrightarrow$
27.	$Sn(OH)_4 \underset{H_2O}{\overset{HCl}{\rightleftharpoons}}$ _____ $\underset{H_2O}{\overset{HCl}{\rightleftharpoons}}$ _____
28.	$Pb^{2+} + H_2O \longrightarrow$
29.	$SiCl_4 + MeMgCl \longrightarrow$

	$PbCl_2 + LiEt \longrightarrow \_\_\_\_\_ \xrightarrow{\Delta} \_\_\_\_\_$
30.g	$PbO_2 + H_2SO_4 \xrightarrow{warm}$ $PbO_2 + HNO_3 \longrightarrow$
31.	$SnO_2 + C \xrightarrow{\Delta}$
32.	$SnC_2O_4 \xrightarrow{\Delta}$