**Questions**

**Q1.**

      Which of the following is **not** a disproportionation reaction?

   **A**      Cl2 + 2OH− → Cl− + ClO− + H2O

   **B**      Cu2O + H2SO4 → CuSO4 + Cu + H2O

   **C**       3IO− → 2I− + IO3+

   **D**      Cu + 4HNO3 → Cu(NO3)2 + 2H2O + 2NO2

**(Total for question = 1 mark)**

**Q2.**

Which one of these reactions is **not** a disproportionation reaction?

   **A**     2H2O2(aq) → O2(g) + 2H2O(l)

   **B**     S2O32−(aq) + 2H+(aq) → SO2(g) + S(s) + H2O(l)

   **C**     Cl2(aq) + 2Br−(aq) → 2Cl−(aq) + Br2(aq)

   **D**     2Cu+(aq)→ Cu(s) + Cu2+(aq)

**(Total for question = 1 mark)**

**Q3.**CO(g) + 2H2(g)  CH3OH(g)       Δ*H* = −91 kJ mol−1

The conditions which would produce the greatest yield of methanol are

   **A**    high pressure and high temperature.

   **B**    high pressure and low temperature.

   **C**    low pressure and low temperature.

   **D**    low pressure and high temperature.

**(Total for Question = 1 mark)**

**Q4.**

      The oxidation number of sulfur in sodium hydrogensulfide, NaHS, is

   **A**      −2

   **B**      −1

   **C**      +1

   **D**      +2

**(Total for question = 1 mark)**

**Q5.**

What is the oxidation number of oxygen in dioxygen difluoride, O2F2?

   **A**     −1

   **B**     −2

   **C**     +1

   **D**     +2

**(Total for question = 1 mark)**

**Q6.**

What is the oxidation number of chlorine in the ClO3−ion?

   **A**     −1

   **B**     +4

   **C**     +5

   **D**     +6

**(Total for question = 1 mark)**

**Q7.**

Chemical reactions may involve

**A**     oxidation

**B**     reduction

**C**     no change in oxidation number

**D**     disproportionation

Which of the terms above best describes what happens to the **chlorine** in the following
 reactions?

(a) Cl2(g) + H2O(l) → HCl(aq) + HOCl(aq)

**(1)**

   **A**

   **B**

   **C**

   **D**

(b) Cl2(g) + 2Na(s) → 2NaCl(s)

**(1)**

   **A**

   **B**

   **C**

   **D**

(c) NaCl(s) + H2SO4(l) → HCl(g) + NaHSO4(s)

**(1)**

   **A**

   **B**

   **C**

   **D**

**(Total for question = 3 marks)**

**Q8.**

What is the oxidation number of oxygen in OF2?

   **A**   -2

   **B**   -1

   **C**   +1

   **D**   +2

**(Total for question = 1 mark)**

**Q9.**

Iodine can react with sodium hydroxide solution to form NaIO3(aq), according to the
 equation below.



Which of the statements about the reaction is **false**?

   **A**     The oxidation number of some iodine atoms goes up.

   **B**     At high temperatures NaIO(aq) also forms.

   **C**     Sodium ions are spectator ions.

   **D**     The oxidation number of some iodine atoms goes down.

**(Total for question = 1 mark)**

**Q10.**

Which of these reactions is **not** a redox reaction?

   **A**     Mg(NO3)2(s) → MgO(s) + 2NO2(g) + ½O2(g)

   **B**     HCl(aq) + NaOH(aq) → NaCl(aq) + H2O(l)

   **C**     Fe(s) + CuSO4(aq) → FeSO4(aq) + Cu(s)

   **D**     Cl2(aq) + 2Br−(aq) → 2Cl−(aq) + Br2(aq)

**(Total for question = 1 mark)**

**Q11.**

What is the oxidation number of phosphorus in P4O6?

   **A**    +3

   **B**    +4

   **C**    +5

   **D**    +6

**(Total for question = 1 mark)**

**Q12.**The thermite reaction, shown below, is a useful industrial process.

Fe2O3(s) + 2Al(s) → 2Fe(l) + Al2O3(s)

The iron in this reaction undergoes

   **A**    disproportionation.

   **B**    oxidation.

   **C**    redox.

   **D**    reduction.

**(Total for Question = 1 mark)**

**Q13.**

In which of the following reactions is sulfuric(IV) acid, H2SO3, acting as an oxidizing agent?

   **A**   2NaOH + H2SO3 → Na2SO3 + 2H2O

   **B**   2FeCl3 + H2SO3 + H2O → 2FeCl2 + H2SO4 + 2HCl

   **C**   2H2S + H2SO3 → 3H2O + 3S

   **D**   H2SO3 → H2O + SO2

**(Total for question = 1 mark)**

**Mark Scheme**

**Q1.**



**Q2.**



**Q3.**



**Q4.**



**Q5.**



**Q6.**



**Q7.**



**Q8.**



**Q9.**



**Q10.**



**Q11.**



**Q12.**



**Q13.**

