4. ΔG and E°_{cell} for a spontaneous reaction will be: **1**

(*a*) positive, negative (*b*) negative, negative (*c*) negative, positive (*d*) positive, positive

Sol. (c) negative, positive

5. Which of the following is affected by catalyst? **1**

(*a*) ΔH (*b*) ΔG (*c*) E_a (*d*) ΔS

Sol. (c) Ea

6. The order of the reaction $H_2(g) + Cl_2(g) \xrightarrow{hv} 2HCl(g)$ is: **1**

(*a*) 2 (*b*) 1 (*c*) 0 (*d*) 3

Sol. (c) 0

7. The most common and stable oxidation state of a Lanthanoid is: **1**

(*a*) + 2 (*b*) + 3 (*c*) + 4 (*d*) + 6

Sol. (b) +3

8. The compounds $[Co(SO_4)(NH_3)_5]Br$ and $[Co(Br)(NH_3)_5]SO_4$ represent: **1**

(*a*) optical isomerism (*b*) linkage isomerism (*c*) ionisation isomerism (*d*) coordination isomerism

Sol. (c) Ionisation isomerism

9. The synthesis of alkyl fluoride is best obtained from : **1**

(*a*) Free radicals (*b*) Swartz reaction (*c*) Sandmeyer reaction (*d*) Finkelstein reaction

Sol. (b) Swartz reaction

10. In the reaction $R - OH + HCl \xrightarrow{ZnCl_2} RCl + H_2O$, what is the correct order of reactivity of alcohol? **1**

(*a*) $1^\circ < 2^\circ < 3^\circ$ (*b*) $1^\circ > 3^\circ > 2^\circ$ (*c*) $1^\circ > 2^\circ > 3^\circ$ (*d*) $3^\circ > 1^\circ > 2^\circ$

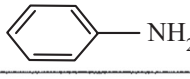
Sol. (a) $1^\circ < 2^\circ < 3^\circ$

11. CH_3CONH_2 on reaction with NaOH and Br_2 in alcoholic medium gives: **1**

(*a*) CH_3COONa (*b*) CH_3NH_2 (*c*) CH_3CH_2Br (*d*) $CH_3CH_2NH_2$

Sol. (b) CH_3NH_2

12. Which of the following is least basic? **1**

(*a*) $(CH_3)_2NH$ (*b*) NH_3 (*c*)  (*d*) $(CH_3)_3N$

Sol. (c)