PART-II_CHEMISTRY **Max Marks : 60**

Section-1
(One or more options correct type)

This section contains 10 Multiple Choice questions. Each Question has Four choices (A), (B), (C) and (D). Out of Which **Only One is correct**

21. $HClO_4 + P_4O_{10} \rightarrow A + B$. In 'A', the number of $d_\pi - p_\pi$ bonds are

A) 8 B) 4 C) 6 D) 7

22. $'p'\ Au + qCN^- + H_2O + O_2 \rightarrow X + OH^-$. In the balanced stoichiometric equation the 'q' value is

A) 8 B) 4 C) 2 D) 6

23. $KI + I_2 \rightleftarrows KX$. The true statement regarding the anion 'X' is

A) It has bent structure

B) The central iodine atom has sp^3 hybridization

C) It has one $d_\pi - p_\pi$ bond

D) It has 9 lone-pairs

24. Which of the following is oxidized by Conc. H_2SO_4 ?

A) HF B) HCl C) HI D) H_2F_2

25. The number of $d_\pi - p_\pi$ bonds in perxenate ion is

A) 4 B) 6 C) 8 D) 2

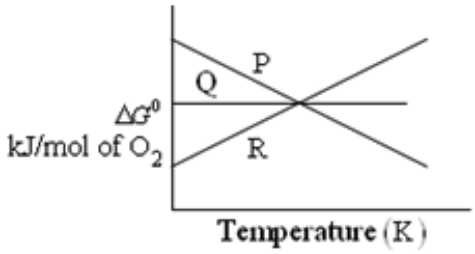
26. Which one of the following is not a carbonate mineral?

A) Cerrusite B) Anglesite C) Calamine D) Aragonite

27. (I) $C(s)+O_2(g)\rightarrow CO_2(g)$

(II) $2CO(g)+O_2(g)\rightarrow 2CO_2(g)$

(III) $2C+O_2(g)\rightarrow 2CO(g)$



Match the graph with the above process

A) P-I, Q-II, R-III B) P-II, Q-I, R-III

C) P-III, Q-I,R-II D) P-III, Q-II, R-I

28. The usual carbon content in steel is

A) 2 – 6% B) 2 – 0.2% C) 0.1 – 1% D) 0 – 6%

29. The chief slag formed in the Blast furnace during the extraction of iron is

A) $FeSiO_3$ B) $MgSiO_3$ C) $Ca_3(PO_4)_2$ D) $CaSiO_3$

30. The slag formed during the Bessemer process in the extraction of copper is

A) $FeSiO_3$ B) $MgSiO_3$ C) $Ca_3(PO_4)_2$ D) $CaSiO_3$

Section-2
(Paragraph Type)

This section contains 3 paragraphs each describing theory, experiment, data etc. Six questions relate to three paragraphs with two questions on each paragraph. Each question pertaining to a particular **paragraph** should have only one correct answer among the four choices A, B, C and D.

Paragraph for Questions 31 and 32

$$FeO.Cr_2O_3 \xrightarrow[\text{Blast of air}]{\overset{Na_2CO_3}{\underset{\Delta}{\longrightarrow}}} Mass \xrightarrow[\text{evaporated, crystallized}]{\text{leached with water,}} P(\text{yellow compound})$$

$$P \xrightarrow{Conc.H_2SO_4} Q + Na_2SO_4.10H_2O \left(\begin{matrix}\text{crystalized and}\\ \text{separated by filtration}\end{matrix}\right)$$

$$Q(\text{orange red}) \xrightarrow{NH_4Cl} NaCl + R(\text{orange red})$$

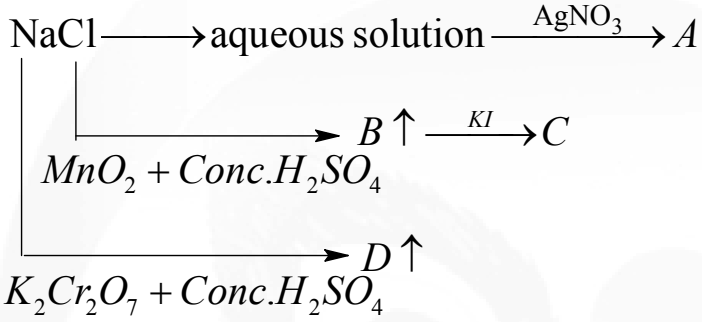
31. $R \xrightarrow[\Delta]{} A + B\uparrow + H_2O$. '$A$' and '$B$' are

A) Cr and N_2 B) Cr_2O_3 and N_2 C) Cr and NH_3 D) Cr_2O_3 and NH_3

32. 'A' can be best reduced to metal by using

A) H_2 B) C C) Al D) Mg

Paragraph for Question 33 and 34



33. The number of $d_\pi - p_\pi$ bonds in 'D' is

A)1 B)2 C)3 D) 4

34. The correct statement regarding A or B or C is

A) B gives blue color with starch

B) B does not react with water

C) A is insoluble in aqueous ammonia

D) C is soluble in aqueous KI

Paragraph for Question 35 and 36

(i) Cl_2 reacts with water giving $Cl_2 + H_2O \rightarrow HClO + HCl$

(ii) $2CuCl_2 \xrightarrow{\Delta} 2CuCl + Cl_2$

35. Which one of the following can behave like Cl_2 ?

A) O_2 B) N_2 C) CO_2 D) $(CN)_2$

36. $Cu(CN)_2 \xrightarrow{\Delta} A + B\uparrow$

$CuI_2 \xrightarrow{\Delta} C + D$

B & D are respectively

A) $CuCN, CuI$ B) $CuI, CuCN$

C) $I_2, (CN)_2$ D) $(CN)_2, I_2$

Section-3
(Matching List Type)

This section contains four questions, each having two matching lists (List-1 & List-II). The options for the **correct match** are provided as (A), (B),(C) and (D) out of which **ONLY ONE** is correct.

37. Match the column:

Column-I	***Column-II***
P) ClO^-	**1)** Weakest base
Q) ClO_2^-	**2)** Present of $d_\pi - p_\pi$ bonds
R) ClO_3^-	**3)** Highest charge density on oxygen
S) ClO_4^-	**4)** Least delocalization of π-electrons

Code :

	P	**Q**	**R**	**S**		**P**	**Q**	**R**	**S**
A)	3,4	2	2	1,2	B)	3	1,2	3	1,3
C)	4	1,3	2,3	2	D)	1,2	2,3	3,4	1,3

38. Match the element given in column-I with the property related to it given in column-II

Column-I	***Column-II***
P) Cl_2	**1)** Forms stable Gas Hydrate
Q) Xe	**2)** Colored substance
R) I_2	**3)** Oxidizing agent
S) F_2	**4)** Least reactive

	P	**Q**	**R**	**S**
A)	1,3,4	2,4	2,3	1,4
B)	1,2,3	1,4	2,3	2,3
C)	1,4	2,3	2,4	1,2
D)	1,3	1,2	1,3	1,3

39. Match the metal given in column-I with the process related directly for the extraction of metal or for the extraction of other metal

Column-I	***Column-II***
P) Pb	**1)** Parkes process
Q) Ag	**2)** Pattinsons process
R) Zn	**3)** Mc Arthur Forrest cyanide process
S) Au	**4)** Electrorefining

	P	**Q**	**R**	**S**
A)	1,2,3	1,3,4	1,2,4	2,3
B)	1,3	3,4	1,2	1,3
C)	3,4	2,3	1,4	3,4
D)	1,2,4	1,2,3,4	1,3,4	3,4

40. Match the product/s given in column-II with the reactive given in column-I

Column-I		***Column-II***	
P)	$ClO_2 + NaOH$	**1)**	$NaClO_2$
Q)	$Cl_2O_6 + NaOH$	**2)**	$NaClO_3$
R)	$Cl_2O + NaOH\,(\text{cold})$	**3)**	$NaClO_4$
S)	$ClO_2 + NaOH + H_2O_2$	**4)**	$NaClO$

	P	**Q**	**R**	**S**		**P**	**Q**	**R**	**S**
A)	1,2	2,3	4	1	B)	2,3	1,3	1	4
C)	3	2	1	3	D)	1	2	3	4