Questions

Q1 - 24 June - Shift 1

Match List – I with List – II

	List - I		List - II
(A)	Sphalerite	(I)	$FeCO_3$
(B)	Calamine	(II)	PbS
(C)	Galena	(III)	$ZnCO_3$
(D)	Siderite	(IV)	ZnS

Choose the most appropriate answer from the options given below:

(A) (A) - (IV), (B) – (III), (C) – (II), (D) – (I)

(B) (A) - (IV), (B) – (I), (C) – (II), (D) – (III)

(C) (A) - (II), (B) – (III), (C) – (I), (D) – (IV)

(D) (A) - (III), (B) – (IV), (C) – (II), (D) – (I)

Space for your notes:

Q2 - 24 June - Shift 2

Which of the following chemical reactions represents Hall-Heroult Process?

(A) $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$

(B) $2Al_2O_3 + 3C \rightarrow 4Al + 3CO_2$

(C) $FeO + CO \rightarrow Fe + CO_2$

(D) $2\left[Au(CN)_2\right]^-_{(aq)} + Zn(s) \rightarrow 2Au(s) + \left[Zn(CN_4)\right]^{2-}$

Space for your notes:

Q3 - 24 June - Shift 2

(a) Baryte, (b) Galena, (c) Zinc blende and (d) Copper pyrites. How many of these minerals are sulphide based?

Space for your notes:

Questions

Q4 - 25 June - Shift 1

Leaching of gold with dilute aqueous solution of NaCN in presence of oxygen gives complex [A], which on reaction with zinc forms the elemental gold and another complex [B]. [A] and [B], respectively are :-

(A) $[Au(CN)_4]^-$ and $[Zn(CN)_2(OH)_2]^{2-}$

(B) $[Au(CN)_2]^-$ and $[Zn(OH)_4]^{2-}$

(C) $[Au(CN)_2]^-$ and $[Zn(CN)_4]^{2-}$

(D) $[Au(CN)_4]^{2-}$ and $[Zn(CN)_6]^{4-}$

Space for your notes:

Q5 - 25 June - Shift 2

Given below are two statements.

Statement I: During electrolytic refining, blister copper deposits precious metals

Statement II: In the process of obtaining pure copper by electrolysis method, copper blister is used to make the anode.

In the light of the above statements, choose the correct answer from the options given below.

(A) Both Statement I and Statement II are true.

(B) Both Statement I and Statement II are false.

(C) Statement I is true but Statement II is false.

(D) Statement I is false but Statement II is true.

Space for your notes:

Q6 - 26 June - Shift 1

Questions

Given below are two statements :

Statement I : According to the Ellingham diagram, any metal oxide with higher ΔG° is more stable than the one with lower ΔG°.

Statement II : The metal involved in the formation of oxide placed lower in the Ellingham diagram can reduce the oxide of a metal placed higher in the diagram.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) Both **Statement I** and **Statement II** are correct.

(B) Both **Statement I** and **Statement II** are incorrect.

(C) **Statement I** is correct but **Statement II** is incorrect.

(D) **Statement I** is incorrect but **Statement II** is correct.

Space for your notes:

Q7 - 26 June - Shift 2

The role of depressants in Troth Floation method* is to

(1) selectively prevent one component of the ore from coming to the froth.

(2) reduce the consumption of oil for froth formation.

(3) stabilize the froth.

(4) enhance non-wettability of the mineral particles.

Space for your notes:

Q8 - 27 June - Shift 1

Questions

Match List-I with List-II

List-I	List-II
(A) Concentration of gold ore	(I) Aniline
(B) Leaching of alumina	(II) NaOH
(C) Froth stabiliser	(III) SO_2
(D) Blister copper	(IV) NaCN

Choose the correct answer from the options given below.

(A) (A) – (IV), (B) – (III), (C) – (II), (D) – (I)

(B) (A) – (IV), (B) – (II), (C) – (I), (D) – (III)

(C) (A) – (III), (B) – (II), (C) – (I), (D) – (IV)

(D) (A) – (II), (B) – (IV), (C) – (III), (D) – (I)

Space for your notes:

Q9 - 27 June - Shift 2

Questions

Statement I : Leaching of gold with cyanide ion in absence of air / O_2 leads to cyano complex of Au(III).

Statement II : Zinc is oxidized during the displacement reaction carried out for gold extraction.

In the light of the above statements, choose the correct answer from the options given below.

(A) Both Statement I and Statement II are correct

(B) Both Statement I and Statement II are incorrect

(C) Statement I is correct but Statement II is incorrect

(D) Statement I is incorrect but Statement II is correct

Space for your notes:

Q10 - 28 June - Shift 1

Given are two statements one is labelled as Assertion A and other is labelled as Reason R.

Assertion A :Magnesium can reduce Al_2O_3 at a temperature below 1350°C, while above 1350°C aluminium can reduce MgO.

Reason R : The melting and boiling points of magnesium are lower than those of aluminium.

In light of the above statements. choose most appropriate answer from the options given below:

(A) Both A and R are correct. and R is correct explanation of A.

(B) Both A and R are correct. but R is NOT the correct explanation of A.

(C) A is correct R is not correct.

(D) A is not correct. R is correct.

Space for your notes:

Questions

Q11 - 28 June - Shift 2

In the metallurgical extraction of copper, following reaction is used :

$FeO + SiO_2 \rightarrow FeSiO_3$

FeO and $FeSiO_3$ respectively are.

(A) gangue and flux (B) flux and slag

(C) slag and flux (D) gangue and slag

Space for your notes:

Q12 - 29 June - Shift 1

In isolation of which one of the following metals from their ores, the use of cyanide salt is not commonly involved ?

(A) Zinc

(B) Gold

(C) Silver

(D) Copper

Space for your notes:

Q13 - 29 June - Shift 2

Questions

Match List I with List II.

List I Ore	List II Composition
A. Siderite	I. $FeCO_3$
B. Malachite	II. $CuCO_3.Cu(OH)_2$
C. Sphalerite	III. ZnS
D. Calamine	IV. $ZnCO_3$

Choose the correct answer from the options given below:

(A) A-I, B-II, C-III, D-IV

(B) A-III, B-IV, C-II, D-I

(C) A-IV, B-III, C-I, D-II

(D) A-I, B-II, C-IV, D-III

Space for your notes:

Questions

Answer Key

Q1 (A) **Q2** (B) **Q3** (3) **Q4** (C)

Q5 (A) **Q6** (D) **Q7** (A) **Q8** (B)

Q9 (D) **Q10** (B) **Q11** (D) **Q12** (D)

Q13 (A)

Hints and Solutions

Q1 (A)

	List - I		List - II
(A)	Sphalerite	(IV)	ZnS
(B)	Calamine	(III)	$ZnCO_3$
(C)	Galena	(II)	PbS
(D)	Siderite	(I)	$FeCO_3$

Q2 (B)

Hall Heroult process is the major industrial process for extraction of aluminium.

Q3 (3)

(1) Baryte : $BaSO_4$

(2) Galena : PbS

(3) Zinc blende : ZnS

(4) Copper pyrite : $CuFeS_2$

] sulphide (S^{2-}) ores

Q4 (C)

$$Au + NaCN \rightarrow Na[Au(CN)_2]$$

$$Zn + Na[Au(CN)_2] \rightarrow Na_2[Zn(CN)_4] + Au$$

Q5 (A)

In the electro-refining, impure metal (here blister copper) is used as an anode while precious metal like Au, Pt get deposited as anode mud.

Q6 (D)

Metal oxide with lower ΔG° is more stable

Statement II is correct

Q7 (A)

Hints and Solutions

Refer NCERT (Page No. 154)

Q8 (B)

Gold is concentrated by cyanidation

Leaching of alumina is done by NaOH

Froth stabiliser is aniline

Blister copper has condensed SO_2 on the surface

Q9 (D)

Statement-1 : wrong, Au^{+} is correct, not Au^{+3}

Statement-2 : correct

Q10 (B)

From Ellingham diagram given in NCERT, it can be seen that Mg, MgO line crosses Al, Al_2O_3 line after 1350°C hence assertion is true.

Yes, Mg have lower MP and BP than aluminium but it does not explain the above fact.

Q11 (D)

$FeO = Gangue$

$FeSiO_3 = Slag$

Q12 (D)

For ZnS, KCN is used as depressant.

For Gold and silver ⇒ leaching [Cyanide process]

Q13 (A)

Hints and Solutions

Siderite – $FeCO_3$

Malachite – $CuCO_3.Cu(OH)_2$

Calamine – $ZnCO_3$

Sphalerite – ZnS