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NEET GENERAL PRINCIPLES OF ISOLATION OF ELEMENTS — THERMODYNAMIC PRINCIPLES (ELLINGHAM) — PYQS

Max. Marks: 44 **Questions:** 11

Section A (MCQ) — 11 questions

Q.1 The reaction that does NOT take place in blast furnace between 900 K to 1500 K temperature range during extraction of iron is : [NEET (UG) 2023]

(1) $FeO + CO \longrightarrow Fe + CO_2$
(2) $C + CO_2 \longrightarrow 2CO$
(3) $CaO + SiO_2 \longrightarrow CaSiO_3$
(4) $Fe_2O_3 + CO \longrightarrow 2FeO + CO_2$

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Q.2 Which one of the following is not a calcination reaction? [NEET (UG) 2022 (Phase 2)]

(1) $CaCO_3 + 2HCl \xrightarrow{\Delta} CaCl_2 + H_2O + CO_2$
(2) $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$
(3) $Fe_2O_3 . xH_2O \xrightarrow{\Delta} Fe_2O_3 + xH_2O$
(4) $CaCO_3 . MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

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Q.3 The maximum temperature that can be achieved in blast furnace is : [NEET (UG) 2021]

(1) Upto 5000 K (2) Upto 1200 K
(3) Upto 2200 K (4) Upto 1900 K

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Q.4 Identify the correct statement from the following : [NEET (UG) 2020]

(1) Blister copper has blistered appearance due to evolution of CO_2
(2) Vapour phase refining is carried out for Nickel by Van Arkel method.
(3) Pig iron can be moulded into a variety of shapes.
(4) Wrought iron is impure iron with 4% carbon.

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Q.5 Considering Ellingham diagram, which of the following metals can be used to reduce alumina? [NEET 2018]

(1) Fe (2) Zn (3) Mg (4) Cu

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Q.6 In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with [AIPMT 2015]

(1) carbon monoxide (2) copper (I) sulphide
(3) sulphur dioxide (4) iron (II) sulphide

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Q.7 The metal oxide which cannot be reduced to metal by carbon is [NEET 2013 (Karnataka)]

(1) Al_2O_3 (2) PbO (3) ZnO (4) Fe_2O_3

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Q.8 In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with [AIPMT 2012 (Prelims)]

(1) carbon monoxide (2) copper (I) sulphide
(3) sulphur dioxide (4) iron (II) sulphide.

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Q.9 The following reactions take place in the blast furnace in the preparation of impure iron. Identify the reaction pertaining to the formation of the slag. [AIPMT 2011 (Mains)]

(1) $Fe_2O_{3(s)} + 3CO_{(g)} \longrightarrow 2Fe_{(l)} + 3CO_{2(g)}$
(2) $CaCO_{3(s)} \longrightarrow CaO_{(s)} + CO_{2(g)}$
(3) $CaO_{(s)} + SiO_{2(s)} \longrightarrow CaSiO_{3(s)}$
(4) $2C_{(s)} + O_{2(g)} \longrightarrow 2CO_{(g)}$

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Q.10 Which of the following elements is present as the impurity to the maximum extent in pig iron? [AIPMT 2011 (Prelims)]

(1) Manganese (2) Carbon
(3) Silicon (4) Phosphorus

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Q.11 Which of the following statements about the advantage of roasting of sulphide ore before reduction is not true? [AIPMT 2007]

(1) The $\Delta_f G°$ of the sulphide is greater than those for CS_2 and H_2S.

(2) The $\Delta_f G°$ is negative for roasting of sulphide ore to oxide.

(3) Roasting of the sulphide to the oxide is thermodynamically feasible.

(4) Carbon and hydrogen are suitable reducing agents for metal sulphides.

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**4**	**1**	**3**	**3**	**3**	**2**	**1**	**2**	**3**	**2**	**4**