

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) $\text{FeO} + \text{CO} \longrightarrow \text{Fe} + \text{CO}_2$
- (2) $\text{C} + \text{CO}_2 \longrightarrow 2\text{CO}$
- (3) $\text{CaO} + \text{SiO}_2 \longrightarrow \text{CaSiO}_3$
- (4) $\text{Fe}_2\text{O}_3 + \text{CO} \longrightarrow 2\text{FeO} + \text{CO}_2$

Scan or tap for the full solution



Q.2 Which one of the following is not a calcination reaction?

[NEET (UG) 2022 (Phase 2)]

- (1) $\text{CaCO}_3 + 2\text{HCl} \xrightarrow{\Delta} \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
- (2) $\text{ZnCO}_3 \xrightarrow{\Delta} \text{ZnO} + \text{CO}_2$
- (3) $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O} \xrightarrow{\Delta} \text{Fe}_2\text{O}_3 + x\text{H}_2\text{O}$
- (4) $\text{CaCO}_3 \cdot \text{MgCO}_3 \xrightarrow{\Delta} \text{CaO} + \text{MgO} + 2\text{CO}_2$

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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) $\text{Fe}_2\text{O}_{3(s)} + 3\text{CO}_{(g)} \longrightarrow 2\text{Fe}_{(l)} + 3\text{CO}_{2(g)}$
- (2) $\text{CaCO}_{3(s)} \longrightarrow \text{CaO}_{(s)} + \text{CO}_{2(g)}$
- (3) $\text{CaO}_{(s)} + \text{SiO}_{2(s)} \longrightarrow \text{CaSiO}_{3(s)}$
- (4) $2\text{C}_{(s)} + \text{O}_{2(g)} \longrightarrow 2\text{CO}_{(g)}$

Scan or tap for the full solution



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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full solution



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

[AIPMT 2007]

- (1) The $\Delta_r G^\circ$ of the sulphide is greater than those for CS_2 and H_2S .
(2) The $\Delta_r G^\circ$ 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.

Scan or tap for the
full solution



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