

## Unit 14 - Week 12

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# Assignment 12

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-12-09, 23:59 IST.

1) With reference to COREX process, identify the correct statement(s): 2 points

a. It is a single stage smelting Reduction Unit

b. The product is hot metal equivalent to that of Blast Furnace

c. Corex gas may be used for producing DRI, or power generation

d. India has Corex units at JSW and ESSAR plants.

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
b.  
c.  
d.

2) With reference to direct reduction process HYL-IV (ZR), identify the correct statement(s): 2 points

a. It belongs to Hojalata y Lamina S. A., a Mexico based company

b. It is a batch process

c. Reducing gas is generated by steam reforming

d. It was first implemented in Monterrey

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.  
d.

3) Identify the correct statement(s), with reference to HISRNA Process 2 points

a. Exit gas is almost pure CO<sub>2</sub>

b. It uses pure oxygen in smelting reduction vessel

c. It is bottle shaped and at the neck of the bottle it has a high temperature cyclone

d. CO<sub>2</sub> emission from the reactor is high and not environment friendly

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.  
b.  
c.

4) With reference to smelting reduction process, identify the incorrect option(s) 2 points

a. Reduction is primarily carried out in liquid state

b. The product is similar to that of blast furnace

c. Non coking coal is used in the reactor

d. The carbon rate is lower than Blast furnace

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.  
b.  
c.

5) Regarding Hismet process, identify the correct statement(s): 2 points

a. It uses preheated air blast from top

b. In this process coal rate is comparatively less

c. Off gas credit is very high

d. Dried coal and ore fines are directly injected

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.  
b.  
d.

6) Which is not a smelting reduction process? 1 point

a. Corex

b. Romelt

c. Midrex

d. Hismet

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

7) What is the average level of per capita steel demand in India? 1 point

a. ~125 kg

b. ~50 kg

c. ~70 kg

d. ~225 kg

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

8) India's total coal reserve is \_\_\_\_\_ % to that of the world's coal reserve. 1 point

a. ~12.50

b. ~5.60

c. ~7.60

d. ~22.50

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

9) What is the average level of CO<sub>2</sub> emission per ton of crude steel (tes)? 1 point

a. ~1.5 tonne/tes

b. ~2.0 tonne/tes

c. ~2.3 tonne/tes

d. ~1.7 tonne/tes

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
b.

10) Coal gasification unit is present in \_\_\_\_\_ SR process. 1 point

a. Single stage

b. Two stage

c. Three stage

d. All of the above

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

11) \_\_\_\_\_ can accept high alkali containing ores without any build-up inside the reactor/furnace. 1 point

a. Blast furnace

b. Mini blast furnace

c. COREX

d. All of the above

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

12) \_\_\_\_\_ is the first company which started steel making in India. 1 point

a. Tata Iron and Steel Company

b. Bengal Iron and Steel Company

c. Steel Authority of India Ltd.

d. JSW Steel

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
b.

13) China's share in global steel production is \_\_\_\_\_. 1 point

a. > 30%

b. > 40%

c. > 50%

d. > 60%

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

14) Match the steel producing companies with their rank as per steel production in 2019. 2 points

Rank	Company
I. 1	P. ArcelorMittal
II. 3	Q. Tata Steel Group
III. 5	R. POSCO
IV. 9	S. Nippon Steel Corporation

a. I-R, II-P, III-S, IV-Q

b. I-S, II-Q, III-P, IV-R

c. I-Q, II-P, III-S, IV-R

d. I-P, II-S, III-R, IV-Q

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
d.

**Common data for questions 15 to 17**

COREX process produces pig iron of composition Fe 94%, Si 2%, Mn 0.5% and C 3.5% by reduction smelting of iron ore, coal and limestone. The analysis is as follows:

**Iron Ore:** Fe<sub>2</sub>O<sub>3</sub> 85%, SiO<sub>2</sub> 8%, Al<sub>2</sub>O<sub>3</sub> 5%, MnO 2%

**Coal:** 86% C, Al<sub>2</sub>O<sub>3</sub> 5%, SiO<sub>2</sub> 4%, and S 4%; Amount is 800 Kg per ton of pig iron

**Limestone:** Pure CaCO<sub>3</sub> to produce a slag of 45% CaO

15) Calculate amount of ore required per ton of pig iron 2 points

a. 1343 kg

b. 1443 kg

c. 1580 kg

d. 1680 kg

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

16) Calculate percentage of total input SiO<sub>2</sub> reduced in the furnace. 2 points

a. 13%

b. 18%

c. 21%

d. 27%

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
d.

17) Calculate weight of slag per ton of pig iron. 2 points

a. 327 kg

b. 218 kg

c. 421 kg

d. 385 kg

a.  
 b.  
 c.  
 d.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
a.