Assignment 7

The due date for submitting this assignment has passed. Due on 2018-03-28, 23:59 IST.

Submitted assignment

1) Questions 1 to 6: True or False:
   Combustion zone is above the cohesive zone.
   - True
   - False

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

2) Rise in blast pressure is one of the indications of scaffolding.
   - True
   - False

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

3) Direct reduction of iron process is similar to the stack region process of the blast furnace.
   - True
   - False

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

4) One of the main disadvantages of direct reduction of iron is that the final metallic iron produced is highly porous in nature.
   - True
   - False

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

5) In a blast furnace, the non-topochemical reaction follows zero order kinetics.
   - True
   - False
6) During blast furnace blow-in process, the first few casts have lower Si content in hot metal.

   - True
   - False

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

7) Questions 7 to 12: Fill in the blanks:

   ___°C is the initial blast temperature when the blast furnace is started for the first time.
   (enter your answer as a number. eg: if your answer is 500, enter 500; not five hundred.)

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: (Type: String) 200

8) The process of shutting down the furnace is called ___ down.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: (Type: String) blow

9) The blast is taken off for a short period of time; which is called as ____ drafting.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: (Type: String) back

10) Formation of cold, central column of stock with hot annular zone in blast furnace is called ____.

    No, the answer is incorrect.
    Score: 0
    Accepted Answers: (Type: String) Pillaring

11) ____ is a process in which metallic iron is produced by the reduction of iron ore below its melting point.
12) ____ is the major organic component in natural gas.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) Direct reduction

0.25 points

13) Consider the reduction of spherical wustite pellet by H\textsubscript{2} into metallic iron at 700\textdegree C. Some time is required to reduce the wustite pellet from 1cm diameter to 0.8cm diameter. The density of wustite is 4000kg/m\textsuperscript{3}. The value of the constant 'k' may be taken as 0.09kg.s/m\textsuperscript{2}. Find out the approximate fraction reacted and time required in seconds, respectively, to reduce the wustite pellet from 1cm to 0.8cm diameter.

- 0.22, 10.5s
- 0.49, 44.0s
- 0.22, 20.8s
- 0.49, 68.7s

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.49, 44.0s

3 points

14) Questions 14 to 21: Multiple Choice Questions:
The sequence of blast furnace blow-in process is:

- Filling, drying, lighting, operation.
- Filling, lighting, drying, operation.
- Operation, filling, drying, lighting.
- Drying, filling, lighting, operation.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Drying, filling, lighting, operation.

0.5 points

15) The process of shutting down the blast furnace for a short period, can be carried out by:

- blow-in
- blow-out
- banking
- all of the above.

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

0.5 points

16) The chilled hearth problem in a blast furnace can be removed by:

- High flame temperature and high fuel rate
- Low flame temperature and low fuel rate
- Adding limestone
- Using bell-less charging

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

No, the answer is incorrect.
Score: 0
Accepted Answers:
*High flame temperature and high fuel rate*

17) Usually direct reduced iron (DRI) has:
- High Sulphur content
- No tramp elements
- High porosity
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
*All of the above*

18) From start to end in blow-in method of a blast furnace, the following keeps on decreasing:
- Coke rate
- Blast volume
- Si content in hot metal
- Both first and second options

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Both first and second options*

19) Which gas flow pattern helps in reducing the alkalis?
- Peripheral
- Central

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

20) Hanging at the top in a blast furnace occurs due to:
- Bridge formation
- Wedge formation
- Scaffolding
- Carbon deposition reaction

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Carbon deposition reaction*

21) Midrex process is:
- Coal based
- Gas based
- Rotary type
- Fluidized bed type

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Gas based*