Assignment 6

The due date for submitting this assignment has passed. **Due on 2018-03-21, 23:59 IST.**

Submitted assignment

1) When the gangue content in iron ore increases:  
- Flux consumption increases
- Amount of slag increases
- Molten metal will have high impurity content
- All of the above

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

2) Flame temperature is prevailed in the following region:  
- Bosh
- Raceway
- Cohesive zone
- Hearth

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

3) Which of the following factors(s) is/are responsible to reduce the slag rate in a blast furnace?
- Better quality coke with low ash content
- Use of agglomerates (sinter and pellets)
- Use of O\textsubscript{2} enriched blast
- Both first and second choices

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

4) Near the tuyere (inside the raceway), the gas atmosphere is:
- Reducing
- Oxidizing
- Neutral
- First reducing and then oxidizing

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

5) How many types of slags prevail in a blast furnace? 0.5 points
   - Only one type
   - Two types
   - Three types
   - Four types

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

6) Which of the following statements is true? 0.5 points
   - Almost all of the silicon transfer to the hot metal occurs via the gaseous phase
   - Almost all of the silicon transfer to the hot metal occurs via slag-metal reactions
   - Gaseous phase reactions and slag-metal reactions are equal contributors to the silicon transfer to the hot metal
   - Silicon transfer to the hot metal is a solid state reaction

No, the answer is incorrect.
Score: 0
Accepted Answers: Almost all of the silicon transfer to the hot metal occurs via the gaseous phase

7) In a blast furnace, 1 tonne of coke is burned per day and the consumption of coke was found to be 60%. Find the approximate productivity of the blast furnace in THM/day 1 point
   - 1.0
   - 1.4
   - 1.7
   - 2.0

No, the answer is incorrect.
Score: 0
Accepted Answers: 1.7

8) The approximate density (g/cm³) of pure iron at 2500K is: 0 points
   - 7.8
   - 8.0
   - 8.3
   - 8.5

No, the answer is incorrect.
Score: 0
Accepted Answers: 8.3

9) The approximate surface tension (N/m) of iron at 1800K is: 1 point
   - 1.0
   - 1.4
   - 1.8
   - 2.1

No, the answer is incorrect.
Score: 0
Assume that 35% of the coke ash is released above the tuyere level and is incorporated in the bosh slag. Final slag basicity is 1.3 and coke rate is 500 kg/THM.
Coke contains 12% ash, which has 50% SiO$_2$ in it.
Iron ore has 52% Fe and 5.6% SiO$_2$. Consider 93% Fe in the one ton of final pig iron.

Calculate:
The amount of iron ore input, amount of ash in coke, total silica, total lime (to be added as CaO) and bosh slag basicity to produce 1 ton of liquid iron would respectively be:

- 1788 kg, 60 kg, 130 kg, 169 kg, 1.5
- 1788 kg, 30 kg, 130 kg, 121 kg, 3.5
- 1788 kg, 30 kg, 100 kg, 169 kg, 5.5
- 1788 kg, 60 kg, 90 kg, 121 kg, 2.5

No, the answer is incorrect.
Score: 0

Accepted Answers:
1788 kg, 60 kg, 130 kg, 169 kg, 1.5