

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- VII<sup>th</sup> SEMESTER-EXAMINATION – MAY/JUNE- 2012****Subject code: 172106****Date: 29/05/2012****Subject Name: Advance Ferrous Metallurgy****Time: 02:30 pm – 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What are the problems of Indian steel plant? **07**  
(b) Explain sponge iron production process. **07**

- Q.2** (a) Compare AOD and VOD process. **07**  
(b) How humidifications of blast improve performance of blast furnace? **07**

**OR**

- (b) Explain continuous casting process with neat sketch. **07**

- Q.3** (a) Explain alternative route iron production by mini blast furnace. **07**  
(b) List ferroalloy materials. Discuss the production of ferrochrome. **07**

**OR**

- Q.3** (a) What are different reactions occurring in blast furnace in different sections. **07**  
(b) Discuss the process of reduction smelting. **07**

- Q.4** (a) Discuss refractory lining and temperature profile in blast furnace with neat sketch. **07**  
(b) What are different charging mechanisms in blast furnace? **07**

**OR**

- Q.4** (a) Explain the mechanisms of kinetics of iron oxide reduction in blast furnace. **07**  
(b) Explain electro slag refining process and role of synthetic slag. **07**

- Q.5** (a) Does pulverized coal injection reduce metallurgical coke consumption? Explain your answer. **07**  
(b) Draw neat sketch of EAF and explain EAF route of steel production. **07**

**OR**

- Q.5** (a) What are the impurities of iron and steel? How to control them? **07**  
(b) What are the factors affecting reduction rate of iron ore? Briefly discuss them. **07**

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