

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014

Subject Code: 172106**Date: 31-05-2014****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) List the factors affecting reduction rate of iron ore and explain any two in detail. **07**
 (b) What are the alternative routes of iron production? Explain Mini blast furnace **07**
- Q.2** (a) What are the problems of Indian steel plant? Explain **07**
 (b) How humidifications of blast improve performance of blast furnace? **07**
- OR**
- (b) With labeled diagram of blast furnace explain the reactions occurring in blast furnace. **07**
- Q.3** (a) Pulverized coal injection technique helps to improve the performance of blast furnace. Explain it. **07**
 (b) Discuss the process of reduction smelting. **07**
- OR**
- Q.3** (a) Discuss refractory lining and temperature profile in blast furnace with neat sketch **07**
 (b) Discuss different charging mechanisms in blast furnace? **07**
- Q.4** (a) How the high temperature and oxygen enrichment of blast Improves the performance of blast furnace? **07**
 (b) Explain electro slag refining process and role of synthetic slag **07**
- OR**
- Q.4** (a) What are different ferroalloys used? Discuss Ferrochrome production **07**
 (b) What are the sources of sulfur and phosphorous and what is the effect of it on quality of steel. **07**
- Q.5** (a) Draw neat sketch of EAF and explain EAF route of steel production. **07**
 (b) Explain sponge iron production process. **07**
- OR**
- Q.5** (a) Compare AOD and VOD process. **07**
 (b) Explain continuous casting process with neat sketch **07**
