

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014****Subject Code: 162102****Date: 28-11-2014****Subject Name: Steel Making****Time: 2:30 pm - 05:30 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 is an integrated steel plant? Name the plants and products of these plants in India **07**

**(b)** With the help of schematic show various latest routes of steelmaking and explain raw materials and their importance in steel making. **07**

**Q.2 (a)** Compare LD process and LD-AC process with Neat diagram **07**

**(b)** Explain: Reaction at slag metal interface. **07**

**OR**

**(b)** List Design Improvements in modern EAF practice. Discuss briefly about UHP arc furnaces. **07**

**Q.3 (a)** Explain the Oxygen Lance Construction & advantages and disadvantages of single & multi nozzle lance **07**

**(b)** Discuss the advantages and disadvantages of top and bottom blown processes **07**

**OR**

**Q.3 (a)** Explain in brief, the effect of Sulphur, Phosphorous and gases in Steel. **07**

**(b)** Explain briefly (i) Carbon Reaction, Reaction, (iii) Silicon Reaction, (iv) Manganese Reaction. **07**

**Q.4 (a)** (i) Explain ESR Process in brief & explain improvement in quality by ESR process **07**

**(b)** How the nitrogen problem in stainless steel making is dealt with? **07**

**OR**

**Q.4 (a)** List the benefits of Secondary Steel Making and Explain briefly Secondary steel making by AOD process. **04**

Draw and explain- Ladle Furnace Operation **03**

**(b)** Discuss the main requirements of “Deoxidizer” in steel making. Explain the purpose and mechanism of its working **07**

**Q.5 (a)** Explain the following with neat diagram.

(i) Ladle Injection Metallurgy **04**

(ii) R-H degassers **03**

**(b)** Explain the difference in structure by Ingot Casting & Continuous Casting method **07**

**OR**

**Q.5 (a)** What are the sources of inclusions? State the measures to control inclusions. **07**

**(b)** What is continuous casting (C.C.)? List the parts of C.C. equipment. **07**