

GUJARAT TECHNOLOGICAL UNIVERSITY**B E Sem-VI Examination May 2011****Subject code: 162102****Subject Name: Steel Making****Date: 17/05/2011****Time: 10.30 am – 01.00 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) (i) Write names of the processes in which oxygen, oxygen + lime & oxygen + hydro carbon are used. **04**
 (ii) Name various Integrated and Mini Steel Plants in India. **03**
 (b) (i) What are the Importance and Mechanism of Decarburization Reaction in steel making ? **04**
 (ii) Briefly explain reaction at Slag Metal interface . **03**

- Q.2** (a) Explain the Oxygen Lance Construction & advantages and disadvantages of single & multi nozzle lance. **07**
 (b) Mention major parts of Electric Arc Furnaces. Explain EAF Operations in brief. **07**

OR

- (b) Read the following statements carefully and comment on the validity of the statements:
 (i) Oxygen Steel making does not consume any energy. **04**
 (ii) There are no gases in killed steel . **03**

- Q.3** (a) (i) What do you mean by good quality of steel. **02**
 (ii) Explain the effect of Sulphur, Phosphorus, and Gases in Steel. **05**
 (b) (i) Explain in which steel making process normally Sulphur level is controlled? **02**
 (ii) Explain necessary conditions for Desulphurization & Dephosphorization in steel making. **05**

OR

- Q.3** (a) Explain Laddle Refining process & its uses. **07**
 (b) (i) What are the benefits of Secondary Steel Making processes. **03**
 (ii) Give few examples of steels subjected to Secondary Steel Making processes . **04**

- Q.4** (a) Explain the following with neat diagram.
 (i) Ladle Injection Metallurgy. **03**
 (ii) R-H degasers. **04**
 (b) Explain ESR Process & explain improvement in quality by ESR process. **07**

OR

- Q.4** (a) Explain Continuous casting machines with its various units & products. **07**
 (b) Explain the difference in structure by Ingot Casting & Continuous Casting method. **07**

Q.5	(a)	(i) Compare LD process & LD-AC process.	03
		(ii) Briefly explain the lining used in BOF.	04
	(b)	What are HP & UHP arc Furnaces.	04
		Mention advantages of UHP arc furnace.	03
OR			
Q.5	(a)	(i) What is the origin of inclusion & explain the types of inclusions present in steel?	04
		(ii) What is the role of Sulphur in free cutting steel?	03
	(b)	Write short Notes on the following :	
		(i) Hot shortness & cold shortness in steel	03
		(ii) Alumina Streaks on Coil surface.	02
		(iii) Breakout in Caster.	02
