

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V(New) • EXAMINATION – WINTER 2016****Subject Code:2152108****Date:02/12/2016****Subject Name:Steel Making****Time:10:30 AM to 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.

		MARKS
Q.1	Short Questions	14
	1 What is Steel?	1
	2 State the principle of Steel Making	1
	3 Enlist the steel making furnaces.	1
	4 Give the name of various raw materials use for steel making.	1
	5 Mention refining & tap to tap time for Basic Bessemer process.	1
	6 Mention inclination angle & max. rotation speed for Kaldo vessel	1
	7 What is the function of Oxygen lance in LD Process.	1
	8 Give the mathematical expression for JFN.	1
	9 Which impurity is first eliminated during LD blow?	1
	10 What is bulk refining in LD vessel?	1
	11 What do you mean by Secondary Steel Making Processes?	1
	12 Give the name of various Secondary Steel Making Processes.	1
	13 Give the definition for Rimming Steels & Killed Steel.	1
	14 What is the meaning of continuous casting?	1
Q.2	(a) Give the name of several different materials used in lining a LD vessel.	03
	(b) With the help of schematic show different routes of steelmaking.	04
	(c) Discuss: "Integrated & Mini Steel Plants in India"	07
OR		
	(c) Explain: Reaction at slag metal interface.	07
Q.3	(a) Discuss briefly Basic Oxygen Furnace (BOF).	03
	(b) List the advantages and disadvantages of top and bottom blown processes.	04
	(c) Explain briefly (i) Carbon Reaction, (ii) Phosphorous Reaction, (iii) Silicon Reaction, (iv) Manganese Reaction, (v) Sulphur Reaction.	07
OR		
Q.3	(a) Mention modern development of Electric Arc Furnaces.	03
	(b) Explain Ladle Injection Metallurgy.	04
	(c) Explain construction & working principle of single nozzle oxygen lance with neat sketch.	07
Q.4	(a) Draw a neat sketch showing various parts of the Electric Arc Furnace (EAF).	03
	(b) Explain Electro-slag Refining process.	04
	(c) Compare AOD and VOD processes of Steel Making.	07
OR		
Q.4	(a) List the purposes of secondary steel making.	03
	(b) What is the origin of inclusion & briefly explain the types of inclusions present in steel.	04
	(c) Briefly explain the single & double slag practice for electric steel making	07
Q.5	(a) What are the sources of oxygen, nitrogen and hydrogen in steel?	03

(b) What are the effects of inclusions on mechanical properties of steel? **04**

(c) List the types of C.C. machines and explain any one. **07**

OR

Q.5 (a) List the defects in Con-cast products. **03**

(b) How the nitrogen problem in stainless steel making is dealt with? **04**

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