Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER– 7th EXAMINATION – SUMMER 2015

Subject code: 172106. **Date:06/05/2015**

Subject: Advance ferrous Metallurgy

Time: 02.30PM-05.00PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4.

Q.1	**(a)**	Explain the technique of fuel injection in Blast Furnace and its benefits.	**07**
	(b)	Discuss the problems of Integrated steel plants and Mini steel plants of India.	**07**
Q.2	**(a)**	Compare large Blast Furnace and Mini Blast Furnace. Comment on the success of Mini Blast Furnace plants in India.	**07**
	(b)	How "high top pressure" is created in Blast Furnace? Explain benefits of using high top pressure.	**07**
		OR	
	(b)	Explain "double slag practice" of steel making in electric arc furnace and its advantages.	**07**
Q.3	**(a)**	Write main reduction reactions in sponge iron production. Explain "Rotary kiln process" for sponge iron production.	**07**
	(b)	Discuss "Rapid melting technique" and use of "Water cooled panels" in Electric arc furnace.	**07**
		OR	
Q.3	**(a)**	Mention the stages involved in "Smelting reduction process". Describe "COREX" process of iron production with a sketch.	**07**
	(b)	Explain equipments used for creating vacuum in steel treatment. Describe "ladle degassing process" with a sketch.	**07**
Q.4	**(a)**	List the applications of "Secondary steel making" processes. Describe "ASEA-SKF" process with a neat sketch.	**07**
	(b)	Compare "VAR" and "ESR" processes.	**07**
		OR	
Q.4	**(a)**	Explain "AOD" process and its application.	**07**
Q.4	**(b)**	Discuss use of Sponge iron as a charge material in Electric arc furnace steel making.	**07**
Q.5	**(a)**	Explain the principle of "Continuous casting of steel" and discuss the characteristics of mould used for continuous casting.	**07**
	(b)	Discuss role of various Ferro alloys in making different	**07**

types of steels.

OR

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Q.5	**(a)**	Explain “R-H degassing” technique with a sketch.	**07**
	(b)	Why “SEN”, mould lubrication and fluxes are used in continuous casting of steel?	**07**

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