Seat No.:	Enrolment No
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-IV (NEW) - EXAMINATION - SUMMER 2017** 

Subject Code: 2142107 Date: 12/06/2017

**Subject Name: Iron 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	Why Metallurgical wonder Ashok Iron Pillar has stood the ravages of atmospheric corrosion?	1
	2	Mention composition % Fe for followings:  (I) Magnetite (II) Hematite III) Limonite (IV) Pyrite	1
	3	Define blowing-in.	1
	4	What are the adverse effects of composition of the gangue on the production of Pig Iron?	1
	5	What is DRI?	1
	6	What is coke?	1
	7	Mention the compositions of Pig Iron.	1
	8	List out methods of beneficiation of Iron ore.	1
	9	Define Roasting.	1
	10	Give full form of RAFT.	1
	11	Write Boudouard equilibrium.	1
	12	${CO_2} + {C>_g} = 2 {CO}$ isreaction.	1
	13	Write chemical formula of Wustite.	1
	14	Illustrate with line diagram input and output of blast	1
Q.2	(a)	furnace. Discuss reason for low productivity of blast furnace in India.	03
	<b>(b)</b>	List modern techniques and methods which increase	04
	(D)	productivity and lower coke rate in the blast furnace.	<b>UT</b>
	(c)	Explain the factors affecting value of an iron ore.	07
	(0)	OR	0.
	(c)	Explain the physical and chemical properties of burden charged in blast furnace.	07
<b>Q.3</b>	(a)	Comment on typical iron ore deposit in India.	03
	<b>(b)</b>	Discuss the high blast temperature in blast furnace.	04
	(c)	What is agglomeration of Iron ores? Explain briquetting and nodulising briefly.	07
		OR	
<b>Q.3</b>	(a)	What is induration of pellet?	03
	<b>(b)</b>	Compare and contrast drum pelletiser and disc pelletiser.	04
	(c)	Discuss different charging system in blast furnace iron making.	07
<b>Q.4</b>	(a)	What is 'run way' or 'race way' in blast furnace.	03
	<b>(b)</b>	How the burning of coke occur at tuyere level? Explain.	04
	(c)	With neat sketch of blast furnace illustrate zones in blast furnace and reactions. Also explain basic features.	07

## OR

<b>Q.4</b>	(a)	What is humidification of air blast?	03
	<b>(b)</b>	Write a short note on Thermodynamic equilibria for C-O equilibria.	04
	(c)	Illustrate with figure Dead man's zone & coke slit in blast furnace and explains it.	07
Q.5	(a)	Discuss Acid sinter, Fluxed sinter and Super fluxed sinter.	03
	<b>(b)</b>	Briefly explain Midrex process.	04
	<b>(c)</b>	Discuss kinetics of iron oxides reduction in stack region.	07
	` ′	OR	
Q.5	(a)	What is filling in blast furnace operation?	03
	<b>(b)</b>	Enlist the blast furnace irregularities and give their remedies.	04
	(c)	Write a short note on mini blast furnace.	07

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