

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018****Subject Code:2142107****Date:12/12/2018****Subject Name:Iron Making****Time: 02:30 PM TO 05:00 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	(a) What is the role of coke and limestone in iron making? Explain.	03
	(b) What is PCI in terms of Iron making? How it is benefiting in terms of increasing productivity & quality of Iron production?	04
	(c) Draw a clear detailed view of Blast Furnace showing different temperature zones & label the reactions occurring in different zone	07
Q.2	(a) What is the reducing agent in the blast furnace?	03
	(b) What is humidification of blast furnace?	04
	(c) Classify various testing methods of Raw materials & Explain Evaluation of Iron Ore.	07
	OR	
	(c) Why agglomeration (Nodulising) of iron ore is necessary. Define sinter and pallet	07
Q.3	(a) Explain different variety of iron ore (In Fe %), their occurrences in India.	03
	(b) What is sintering? Discuss the mechanism of sintering process.	04
	(c) Draw Neat diagram of Bell less charging system& explain importance of it.	07
	OR	
Q.3	(a) What is basicity? Discuss importance of maintaining basicity in Iron making.	03
	(b) What is Slag? How it is formed? Explain its importance in Iron making Process.	04
	(c) What are different refractory material used in different zones of blast furnace& Cowper stove ?Justify them.	07
Q.4	(a) Explain effects and advantages of high top pressure in blast furnace Iron making.	03
	(b) What is palletisation? Explain theory of bonding and mechanism of ball formation in palletisation.	04
	(c) What is “external desulphurization” and explain any one method of external desulphurization.	07
	OR	
Q.4	(a) Classify various testing methods of Raw materials In Iron making.	03
	(b) Discuss use of high temperature blast and its effect on coke rate and metal-impurity distribution in slag and metal	04
	(c) What is humidification of blast in iron making? Discuss its advantages.	07
Q.5	(a) Write short note on Pig Casting Machine.	03
	(b) Draw & List only operational steps of blast furnace.	04
	(c) What are different alternative iron making processes? Explain Midrex process	07

- Q.5** (a) Which company is the world's largest producer of iron ore? **03**
- (b) Difference between direct reduction & Indirect reduction in iron making process. **04**
- (c) What are irregularities in blast furnace operations? Explain Pillaring and Scaffolding. **07**

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