

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019

Subject Code: 2142107
Date: 16/12/2019
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	(a) How the term 'pig iron' originated?	03
	(b) What are the developments that led to Modern Iron Making?	04
	(c) With neat sketch of blast furnace, illustrate zones in blast furnace and its reactions. Also explain basic features.	07
Q.2	(a) What is basicity of slag?	03
	(b) List the minerals of Iron with formula, Color and Composition %Fe.	04
	(c) Explain with sketch the modern iron making from the ancient iron making step by step.	07
	OR	
	(c) Explain the basic principle of sintering. With neat sketch explain down draught sintering process.	07
Q.3	(a) What are the functions of coke in blast furnace?	03
	(b) How the angle and size of the bell affect the distribution of burden in blast furnace?	04
	(c) Explain valuation of iron ore.	07
	OR	
Q.3	(a) Define coke. What do you mean by metallurgical coal or coking coal?	03
	(b) What is the agglomeration of iron ores? Classify the process of agglomeration and explain any one.	04
	(c) What are the steps of pelletisation process? Explain theory of bonding.	07
Q.4	(a) What do you mean by induration of pellets?	03
	(b) Compare and contrast disc and drum pelletiser.	04
	(c) Illustrate with figure Dead man's zone & coke slit in blast furnace and explains it.	07
	OR	
Q.4	(a) What is the full form of RAFT? Explain briefly.	03
	(b) Briefly explain Slag-metal reaction in blast furnace.	04
	(c) Write a short note on Thermodynamic equilibria for Fe-C-O system.	07
Q.5	(a) What do you mean by banking in blast furnace operations?	03
	(b) What are the irregularities of blast furnace? Give remedies for two irregularities.	04
	(c) Write a short note on mini blast furnace.	07
	OR	
Q.5	(a) Enlist the alternative methods of Iron Making.	03
	(b) Discuss different charging system in blast furnace iron making.	04
	(c) Explain the kinetics of reduction of iron oxide in stack region.	07
