

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V EXAMINATION – WINTER 2015****Subject Code: 152101****Date:15/12/2015****Subject Name: Iron Making****Time: 10:30am to 1:00pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain terms ore, slag and flux. List raw materials for Iron making and give their composition and locations in India. **03+04**
- (b) Draw a clear detailed view of Blast Furnace with necessary attachments. (Label it properly.) **07**
- Q.2** (a) Why agglomeration (Nodulising) of iron ore is necessary. Define sinter and pallet. **03 + 04**
- (b) Explain the factors affecting the valuation of iron ore. **07**
- OR**
- (b) What is the role of coke and limestone in iron making? Explain. **07**
- Q.3** (a) What is palletisation? Explain theory of bonding and mechanism of ball formation in palletisation. **03+04**
- (b) Discuss the objective and mechanism of sintering of iron ore fines & write short note on “Dwight-Lloyed” Sintering Machine. **03+04**
- OR**
- Q.3** (a) Write Short Notes of the following: **03+**
(1) Bell less charging system (2) RAFT (3) Pulverized coal injection **02+**
02
- (b) What are different refractories used in different zones of blast furnace? Explain with suitable reason. **07**
- Q.4** (a) Discuss the Thermodynamic conditions of effective desiliconization and dephosphorization in Blast furnace. **04+03**
- (b) What is Slag? How it is formed? Explain its importance in Iron making Process. **07**
- OR**
- Q.4** (a) Explain blast furnace reactions in different zones of Blast Furnace.s **07**
- (b) Discuss use of high temperature blast and its effect on coke rate and metal-impurity distribution in slag and metal **07**
- Q.5** (a) Enlist different alternative iron making processes & Explain Midrex process with neat diagram. **02 + 05**
- (b) What is humidification of blast in iron making? Discuss its advantages. **04 +03**
- OR**
- Q.5** Distinguish the following
- (a) Direct Reduction and Indirect Reduction **7**
- (b) (i) ESP and Ventury washer (ii) Pillaring and Scaffolding **4+3**