

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-V Examination-Nov/Dec.-2011****Subject code: 152101****Date: 22/11/2011****Subject Name: Iron Making****Time: 2.30 pm -5.00 pm****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 dead man's zone and coke slits in Blast furnace with schematic diagrams. **07**

(b) Explain the thermodynamic equilibria for C–O equilibrium. **07**

Q.2 (a) What are the factors affecting kinetics of iron oxide reduction, in the upper end lower reduction zone in Blast furnace? Discuss **07**

(b) In Blast furnace iron smelting, which is better reducing agent "CO" or "H₂" gas? Justify your above choice with the schematic representation of Fish-tail diagrams. **07**

OR

(b) Classify the principle Iron minerals and explain where Indian Iron ore deposits are available. What are the drawbacks of Indian raw materials for Blast furnace Iron Making? **07**

Q.3 (a) What are the objects of Sintering? With neat sketch discuss continuous Down-Draught sintering machine. **14**

OR

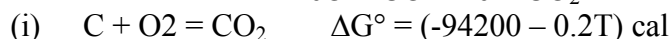
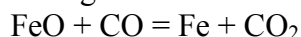
Q.3 (a) The volume of blast by tone of hot metal was found 2868 m³. The coke used per tone was 900 Kg. The coke contains 30 % C. Calculate the % of C of coke i.e. burnt at the tuyeres and heat produced by burning of coke. **07**

(b) Describe the mechanism of pellet formation in pelletizer. **07**

Q.4 (a) (i) What do you mean by direct and indirect reduction during Blast furnace Iron Making? **07**

(ii) Which refractories are used in Blast furnace?

(b) Calculate the equilibrium CO/CO₂ ratio for the reduction of FeO at 900 °C according to following reaction: **07**

**OR**

Q.4 (a) Explain most common irregularities in Blast furnace Iron Making. **07**

Q.4 (b) Write the short note on Humidification of Blast furnace Iron Making. **07**

Q.5 (a) Write a note on charge hoisting in Blast furnace. **07**

(b) Write short note on Wet Scrubber. **07**

OR

Q.5 (a) Write a short note on Dust catcher. **07**

(b) Explain utilization of Gas in Blast furnace with schematic diagrams. **07**
