

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V- EXAMINATION – SUMMER 2016****Subject Code: 152104****Date: 06/05/2016****Subject Name: Fuels, Furnaces and Refractory****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.

Q.1 (a) What do you mean by term Fuel? Classify fuel and discuss importance of coke as fuel in metallurgical industry. **07**

(b) Define carbonization and differentiate between LTC and HTC. **07**

Q.2 (a) Define calorific value and give details of Bomb Calorimeter to measure the calorific value of given fuel. **07**

(b) Describe the working and construction of cupola. **07**

OR

(b) What are different non conventional fuels? Discuss their applications. **07**

Q.3 (a) Discuss pyrometric cone equivalent test for refractory materials in detail. **07**

(b) What is spalling resistance? Discuss method to measure it. **07**

OR

Q.3 (a) Define and classify furnace and refractories. **07**

(b) What is pyrometry? State principle of thermocouple and discuss its construction and calibration. **07**

Q.4 (a) Explain optical pyrometer with its principle, working and advantages. **07**

(b) Discuss various requirements of good refractory material. **07**

OR

Q.4 (a) What is Flash and Fire point? How they are tested. **07**

(b) Write note on Producer gas. **07**

Q.5 (a) Write note on Coke oven gas. **07**

(b) What is the principle of induction furnace? Explain working of induction furnace. **07**

OR

Q.5 (a) Discuss the role of furnace atmosphere. **07**

(b) What are different heat losses in furnace and how they are minimized? **07**
