Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-V (NEW) - EXAMINATION - SUMMER 2016 Subject Code:2152104 Date:06/05/2016 Subject Name: Fuels, Furnaces, Refractories and Pyrometry 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 is calorific value? Discuss Bomb Calorimeter to measure the calorific 07 value of given fuel. (b) What is pyrometry? State principle of thermocouple and discuss its 07 construction. **Q.2** (a) What are different requirements of good refractory material? Disucss. 07 What do you mean by term Fuel? Classify fuel and discuss importance of coke 07 as fuel in metallurgical industry. OR Explain optical pyrometer with its principle, working and advantages. 07 Define carbonization and differentiate between LTC and HTC. 0.3 07 What is Flash and Fire point? How they are tested. 07 OR 0.3 Describe the working and construction of cupola with neat sketch. 07 (a) Write note on blast furnace gas. 07 **(b)** What are different non-conventional fuels? Discuss their applications. 0.4 07 Write note on Coke oven gas. 07 OR 0.4 Discuss pyrometric cone equivalent test for refractory materials in detail. 07 (a) What is the principle of induction furnace? Explain working of induction **(b)** 07 furnace. (a) Define and classify furnace and refractories. 07 0.5 **(b)** Discuss the role of furnace atmosphere. **07**

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

(a) What is spalling resistance? Discuss method to measure it.

Q.5

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