

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 152104****Date: 17-06-2014****Subject Name: Fuels, Furnaces and Refractory****Time: 10:30 am - 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.

- Q.1** (a) Differentiate between LTC and HTC. **07**
(b) What is fuel? Discuss in detail about comparison and contrast of Solid, Liquid and Gaseous fuels. **07**
- Q.2** (a) Write short Notes on i) Nuclear Fuels ii) Biomass **07**
(b) Define refractoriness under load (RUL) and explain RUL test. **07**
- OR**
- (b) What is caking power of coal? Explain British Standard Swelling number test. **07**
- Q.3** (a) Compare Batch Furnaces and Continuous Furnaces used For heat treatment of metals and alloys. **07**
(b) What is the difference between Natural draught, Induced Draught and Balanced draught. **07**
- OR**
- Q.3** (a) Short note on Electric Arc Furnace used for steel melting. **07**
(b) Draw flow sheet for wet or dry process of fireclay brick manufacture and mention different stages of firing. **07**
- Q.4** (a) Explain the working principle of muffle furnace with figure. . **07**
(b) What are the general requirements of a refractory material? **07**
- OR**
- Q.4** (a) How waste heat can be recovered from Furnace flue gases? **07**
(b) Explain optical pyrometer with its principle, construction, working and advantages. **07**
- Q.5** (a) Write short note on 1) Water gas 2) Solar energy **07**
(b) Short note on Seyler's classification. **07**
- OR**
- Q.5** (a) Short note on Producer gas. **07**
(b) Explain with diagram the working principle of temperature measurement by radiation pyrometer. **07**
