

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 152104****Date: 05/06/2012****Subject Name: Fuels, Furnaces and Refractory****Time: 02:30 pm – 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) Explain the term Fuel and classify it. Give Advantages and limitations of Solid Fuel used in industries. **07**

(b) Mention the importance of Proximate and Ultimate analysis of fuel? **07**

Q.2 (a) List various factors should be taken into account during furnace design **07**

(b) Discuss the factors which affect heating capacity and fuel economy of furnaces **07**

OR

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

Q.3 (a) What is the requirement of controlling furnace atmosphere & explain means of achieving the same. **07**

(b) Explain the working of induction furnace & state the merits. **07**

OR

Q.3 (a) What is the importance of Pyrometric cone equivalent (PCE)? Explain with neat figure. **07**

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

Q.4 (a) Draw flow chart of main steps to be followed in Manufacturing of refractory. Described about each step in brief. **07**

(b) What are the general requirements of a refractory material? **07**

OR

Q.4 (a) Explain- Refractoriness under load (RUL) is a measure for failure resistance. Discuss method to measure it. **07**

(b) List out various Non Conventional sources of energy & Explain about any one source in detail. **07**

Q.5 (a) What is Pyrometry? Give principle of thermocouple and discuss method of its construction and calibration. **07**

(b) Discuss construction and working of a Platinum resistance Pyrometer. **07**

OR

Q.5 (a) Explain with diagram the working principle of temperature measurement by optical pyrometer. **07**

(b) Give in depth comparative study between optical and radiation pyrometers. **07**
