Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem. - V - Examination – June- 2011

Subject code: 152104

Subject Name: Fuels, Furnaces and Refractory

Date:27/06/2011 **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)**	What is fuel? Systematically explain in detail about comparison and contrast of Solid, Liquid and Gaseous fuels.	**07**
	(b)	Short note on Metallurgical coke.	**07**
Q.2	**(a)**	Calculate the minimum volume of air required to burn 1 Kg of coal having following composition by weight:72.4 % C, 5.3% H_2, 1.8 % N_2, 8.5 % O_2, 0.9 % S, 3.9 % Ash, 7.2 % moisture.	**07**
	(b)	Explain carbonization of coal. Differentiate between low temperature carbonization and high temperature carbonization.	**07**
		OR	
	(b)	Brief about Resistance heating furnace.	**07**
Q.3	**(a)**	Explain induction furnace.	**07**
	(b)	Short note on coke oven gas.	**07**
		OR	
Q.3	**(a)**	What is caking power of coal? Explain British Standard Swelling number test.	**07**
	(b)	Which are special refractories? Explain one of it.	**07**
Q.4	**(a)**	Explain optical pyrometer with its principle, construction, working and advantages.	**07**
	(b)	Explain about various form of energy and write their applications in different fields.	**07**
		OR	
Q.4	**(a)**	What is water gas? What is carbureted water gas? Explain its use in industries.	**07**
	(b)	Explain about producer gas.	**07**
Q.5	**(a)**	Short note on Seyler's classification.	**07**
	(b)	Discuss about fire clay refractory.	**07**
		OR	
Q.5	**(a)**	Short note on Nuclear Energy.	**07**
	(b)	Explain High Alumina Refractories.	**07**

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