## **GUJARAT TECHNOLOGICAL UNIVERSITY** B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 170505Date: 28/12/2012Subject Name: Energy Technology (Department Elective - I)Time: 10.30 am - 01.00 pmTotal Marks: 70			
Inst	ruct	ions:	
	1.	Attempt any five questions.	
	2.	Make suitable assumptions wherever necessary.	
	3.	Figures to the right indicate full marks.	
Q.1	(a)	What is meant by renewable energy sources? Explain in brief these energy sources with special reference to Indian context.	07
	<b>(b</b> )	What is proximate & ultimate analysis of coal? Define caking & coking of coal.	04
	(c)	What are the advantages & limitations of renewable energy sources?	03
<b>O.2</b>	(a)	Discuss about growth in situ & drift origin theory of coal in detail.	07
·	(h)	Describe dry & wet washing methods of coal.	04
	(0)	OR	•••
	<b>(b</b> )	Define gasification. Discuss about various zones occurring during gasification process.	04
	(c)	Define the terms: Incident angle; Zenith angle & Hour angle OR	03
	(c)	What is the basic principle of wind energy conversion?	03
Q.3	<b>(a)</b>	Enumerate the different types of concentrating collectors. Describe	07
		parabolic trough collector in detail.	
	<b>(b</b> )	Describe solar pond briefly. What are the main applications of a solar pond? OR	07
Q.3	(a)	List out various applications of solar energy. Describe absorption air conditioning in detail.	07
	<b>(b)</b>	Explain the constructional detail & working of KVIC digester.	07
Q.4	(a)	What is meant by wet fermentation & dry fermentation?	05
-	<b>(b)</b>	What are the factors affecting biogas generation?	04
	(c)	What are the advantages & disadvantages of geothermal energy forms? OR	05
Q.4	(a)	Describe the 'closed cycle' OTEC system, with its advantages over 'open cycle' system.	07
	<b>(b</b> )	What is fuel cell? Discuss about hydrogen oxygen fuel cell with neat sketch?	07
Q.5	(a)	Give short note on metal hydrides.	04
	<b>(b)</b>	Describe Westinghouse electrochemical thermal sulfur cycle of hydrogen	05
	. ,	production.	
	(c)	What is electrolysis? Describe the more popular method of hydrogen production.	05
		OR	
Q.5	<b>(a)</b>	Describe an MHD open cycle system. What are the main advantages of an	06
		MHD power generation?	
	<b>(b)</b>	What is fusion reaction? Differentiate between fission & fusion.	04
	(c)	What are the main conditions for thermonuclear fusion? Explain in brief.	04

\*\*\*\*