Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 151904 **Date: 01-12-2014**

Subject Name: Power Plant Engineering

Time: 10.30 am - 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Use of steam table is permitted.**

Q.1	**(a)**	Draw general layout of modern steam power plant label major components and state the function of each component.	**07**
	(b)	Explain with neat sketch construction and working of Lamont Boiler	**07**
Q.2	**(a)**	Explain types of Super heater and state the various methods used for controlling the superheat temperature of steam.	**07**
	(b)	Write short note on : "Bowl mill for coal pulverization"	**07**
		OR	
	(b)	Explain the working of electrostatic precipitator with neat sketch .	**07**
Q.3	**(a)**	Explain the function of following in combustion of fuel. 1. Hot primary air 2. Secondary air 3.Teritary air	**07**
	(b)	Draught produced by chimney is 3 cm of water column. Temperature of flue gas is 310º C and ambient temperature is 35ºC. The flue gases formed per kg of fuel burnt is 25 kg. Neglect the losses and take the diameter of chimney as 2.0 meter. Calculate 1. Height of chimney in meter 2. Mass of flue gas flowing through the chimney in kg/min	**07**
		OR	
Q.3	**(a)**	Comparison between Mechanical draught cooling tower and Natural cooling tower.	**07**
	(b)	Steam enters the condenser at 37º C. The condenser vacuum is 70 cm of mercury when the barometer reads 75 cm of mercury. Determine 1. Vacuum efficiency 2. Mass of air per kg of steam present in condenser	**07**
Q.4	**(a)**	Discuss the methods of meeting variable loads on power plant.	**07**
	(b)	The annual peak load on 40 MW power station is 35 MW. The power station supplies load having maximum demand of 14 MW, 10 MW, 8 MW and 6 MW. The annual load factor is 0.44. Calculate 1. Average load 2. Energy supplied per year 3. Diversity factor 4. Demand factor	**07**
		OR	
Q.4	**(a)**	State advantages and disadvantages of nuclear power plant.	**07**
	(b)	Explain with neat sketch Boiling Water Reactor	**07**
Q.5	**(a)**	Explain with neat sketch arrangement of diesel power plant explain in brief function of each system.	**07**
	(b)	What are the different methods of cooling diesel engine? Compare different methods.	**07**
		OR	

Q.5	**(a)**	Explain the effects of impurities in boiler feed water	**07**
	(b)	With neat sketch discuss : "Hot lime soda process"	**07**

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