Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 151904 **Date: 27/04/2017**

Subject Name: Power Plant Engineering

Time: 02:30 PM to 05:00 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 thermal power plant and label major components. Explain its main four circuits in brief.	**07**
	(b)	Explain with neat sketch construction and working of Loeffler boiler.	**07**
Q.2	**(a)**	Explain construction and working of Electrostatic precipitator with neat sketch.	**07**
	(b)	Explain unique features and give advantages of high pressure boilers.	**07**
		OR	
	(b)	Explain working of two pass flow surface condenser with neat sketch.	**07**
Q.3	**(a)**	Name pulverized coal burners. Explain anyone in detail with neat sketch.	**07**
	(b)	Explain with neat sketch Diesel power plant. Explain function of each system in brief.	**07**
		OR	
Q.3	**(a)**	Derive expression for chimney height in terms of air and flue gas temperature and air-fuel ratio.	**07**
	(b)	A draught of 20mm of water column each produce in 33m high chimney. The air and flue gas temperatures are 300K and 650K. Coal used is 2000Kg/hour. Find (1) quantity of air supplied per Kg of coal (2) The draught in terms of column of hot gases.	**07**
Q.4	**(a)**	Steam enters in condenser at 308K. The condenser vacuum is 70cm of Hg when barometer reads 75.5cm of Hg. Find (1) Vacuum efficiency (2) mass of air per Kg of steam present in condenser.	**07**
	(b)	Compare mechanical draught cooling tower with natural cooling tower.	**07**
		OR	
Q.4	**(a)**	Explain working of CANDU reactor with neat sketch.	**07**
	(b)	List Nuclear power plants in India with capacity. Give advantages and disadvantages of Nuclear power plant.	**07**
Q.5	**(a)**	Define the following terms (1) Average load (2) Load factor (3) Use factor (4) Demand factor (5) Diversity factor (6) Utilization factor (7) Plant capacity factor	**07**
	(b)	Explain pneumatic ash handling system with neat sketch. Give its advantages and disadvantages.	**07**
		OR	
Q.5	**(a)**	List different impurities found in feed water and give their effects on performance of thermal power plant.	**07**
	(b)	Explain effect of different pollutants on human health by thermal power plants.	**07**

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