Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–IV • EXAMINATION – SUMMER • 2014

Subject Code: X41903 **Date: 21-06-2014**

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. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the layout of modern thermal power plant with neat sketch.	**07**
	(b)	Discuss the unique features of high pressure boiler. Why they are used in modern thermal power plant?	**07**
Q.2	**(a)**	What is condenser? Classify the condenser and compare the jet type and surface type condenser.	**07**
	(b)	The following data were obtained from the test of a surface condenser: Mean temperature of condensation = 35 ^{0}C, Vacuum = 690 mm of Hg, Barometer reading = 750 mm of Hg, Hot well temperature = 28 ^{0}C, Mass of condensate per hour = 1250 kg, Inlet temperature = 17 ^{0}C, Outlet temperature = 30 ^{0}C. State of the steam entering the condenser, x = 0.9. Find out the mass of the cooling water.	**07**
		OR	
	(b)	A boiler is equipped with a chimney of 30 meters height. The flue gases which pas through the chimney are at temperature of 288 ^{0}C, whereas the atmospheric temperature is 21^{0}C. If the air flow through the combustion chamber is 18 kg/kg of fuel burn. Find (1) theoretical draught produced in mm of water and (2)) theoretical draught produced in height of hot gas column.	**07**
Q.3	**(a)**	Write note on Schmidt-Hartmann boiler.	**07**
	(b)	Discuss any two types of ash handling system.	**07**
		OR	
Q.3	**(a)**	Write note on steps involved in coal handling system with neat sketch.	**07**
	(b)	Discuss the merits and demerits of pulverized coal firing system.	**07**
Q.4	**(a)**	Discuses the external water treatment. Explain with neat sketch Zeolite water treatment.	**07**
	(b)	What is the function of cooling towers in thermal power plant? Classify them. Describe with neat sketch the working of Hyperbolic cooling tower.	**07**
		OR	
Q.4	**(a)**	What do you mean by boiler draught? Why do we need draught in thermal power plant? Explain briefly the different types of draught system available in thermal power plant.	**07**
Q.4	**(b)**	What are the sources of air leakage in condenser? How the air leakage does affect the performance of boiler?	**07**
Q.5	**(a)**	Explain the nuclear power plant with neat sketch.	**07**
	(b)	What are the advantages of diesel power plant over steam power plant? Where the diesel power plant is applied?	**07**
		OR	
Q.5	**(a)**	Discuss pollutants from thermal power plant.	**07**
	(b)	What is the load curve? What is the significance of load curve? What do you understand by load factor and diversity factor?	**07**

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