Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 151904

Subject Name: Power Plant Engineering

Date: 18 /12 /2010 **Time: 03.00 pm - 05.30 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)** Draw general lay of modern steam power plant label major component and state function of each component **07**

(b) A Power plant has following annul factor: **07**
Load factor = 0.75
Capacity factor = 0.60
Maximum demand is = 60 MW
Estimate (a) The annual Energy production
(b) The reserve capacity over and above the peak Load and
(c) The hours during which the plant not in Service

Q.2 **(a)** Explain the constructional difference between Low pressure and High pressure boiler **07**

(b) Explain with neat construction and working of sketch La Mont Boiler **07**

OR

(b) Explain with neat sketch construction and working of Benson Boiler **07**

Q.3 **(a)** Explain the traveling grate stoker with help of neat sketch **07**

(b) What are the advantages and Disadvantages of Pulverized coal firing **07**

OR

Q.3 **(a)** Explain the working of Electrostatic precipitator with neat sketch **07**

(b) Classify various Ash handling system. Explain Pneumatic and steam jet ash handling system **07**

Q.4 **(a)** Classify Different types of Fan .Explain why are centrifugal backward-curved blading normally used for Forced Draft. Fan **07**

(b) Compute the required motor capacity needed for F.D. Fan under following condition: **07**

Coal rate	: 10 tonnes/h
Col analysis	: C78.0 , H 3.0, O 3.0, S 1.0 , M 7.0, A 8.0
Excess air	: 30 %
Plenum chamber pressure	: 180 mm of water gauge
Mechanical Efficiency of the Fan	: 60%
Room temperature	: 30^0 C

OR

Q.4	**(a)**	Classify different types of cooling tower used in power plant. Explain Natural draft cooling tower also explain the reason of its hyperbolic shape	**07**
	(b)	Exhaust steam having a quality of 0.9 enter a surface condenser at an absolute pressure of 0.13 bar and comes outs as a water at 45^0 C. The circulating water enters at 30^0 C and leaves at 40^0 C. Estimate quantity of circulating water and condenser efficiency.	**07**
Q.5	**(a)**	What are fission fragment and fission product? Explain Fission Reaction with an example	**07**
	(b)	Explain with neat sketch Pressurizes water Reactor(PWR) Explain function of pressurizer in PWR	**07**
		OR	
Q.5	**(a)**	Explain with neat sketch arrangement of a Diesel power plant explain in brief function of each system	**07**
	(b)	Explain with neat sketch construction and working of CANDU type reactor	**07**

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