

ASSIGNMENT - 5 STEAM BOILERS

Q-1

In a boiler test 1250 kg of coal are consumed in 24 hours. The mass of water exported is 13000 kg. Steam pressure is 7 bar. The feed water temperature was 40degree C. Calorific value of coal is 30,000 kj/kg. The steam is dry and saturated . Calculate 1. equivalent evaporation F and A 100degree C. 2. Boiler efficiency.

Q-2

Steam is generated at 11bar and 250degree C. The feed water temperature is 36degree C. The Calorific value of the coal is 33,700 kj/kg. Steam generated/ kg of coal burnt is 9 kg . Find 1. the factor of evaporation 2. equivalent evaporation from and at 100degree C 3. Boiler power if 260 kghr of coal is burnt.

Q-3

A boiler produces 200 kg of dry and saturated steam per hour at 10 bar. The water temperature =110degree C. 225 kg of coal of a calorific value of 30,000 kj/kg are fired per hour.If 10% of coal remains un burnt calculate 1. The thermal efficiency of the boiler 2. The thermal efficiency of boiler and grate combined.

Q-4

In thermal power plant , the boiler produces 50,000 kg of wet steam/hr with dryness fraction of 0.95. The fed water temperature = 40degree C. Calculate the equivalent evaporation if boil or pressure is 10 bar.

Q-5

A steam generator evaporated 18000 kg/ hr of steam at 10 bar pressure and steam is 97% dry. Feed water temperature =40degree C . Coal is fired at the rate of 2050 kg/hr CV of coal is 28000 kj/kg.

Q-6

The superheated steam is generator from the boiler operation at 12 bar pressure . Steam generated /kg of coal burnt is 10kg . Coal burnt =300 kg/hr . If the enthalapy of superheated steam and water entexing the boiler are 2935.4 kj/kg and 150.74 kj/g respectively , then calculate 1. Equivalent evaporation 2. boiler power.