d) Describe the operating sequence of a soot blowing system. 4

9. a) Why is flame scanner essential for boiler safety. 2

b) Explain problems of scanning of coal flame. How these problems have been sorted out ? 6

c) Describe flame scanning system with neat sketch. 8

10. Write short notes on : 4×4

a) Impact mills

b) Mechanical Dust collector

c) Axial flow fan

d) Mechanical atomiser.

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B. POWER ENGG. FINAL EXAMINATION, 2008

(1st Semester)

POWER PLANT AUXILIARIES AND DRIVE

Time : Three hours Full Marks : 100

(50 marks each part)

Use a separate Answer-Script for each part.

PART–I

Answer Question No. ***1*** *and any* ***two*** *from the rest.*

1. a) Explain, the importance of recirculation of a B.F.P. Determine, the temperature raise in a B.F.P. of Power consumption 4 MW, discharge of 400 T/hr, and efficiency of 70%. 6

b) How, the equilibrium of forces are maintained between the follow plilot valve and speed governor and the same are hydraulically coupled. 6

c) Explain with diagram the importance of vacuum equalizer between condenser and C.E.P well. 6

2. a) Range of a C.W. system is $8^{\circ}C$, Vacuum maintained in condenser is 0.074 bar (h_{fg} – 2407 KJ/kg), Steam consumption for 200 M.W. generation is 700 T/hr, leaving steam with 12% moisture. Determine the

discharge capacity of each of the C.W. pumps, designed to run 3 pumps at 200 M.W. generation. 8

b) Explain with diagram, the range, approach, and cooling efficiency of a C.W. system 8

3. a) What are the principals of deaeration. Draw and explain the function of a deaerator with Vent condenser. 8

b) Explain, the necessity of providing C.E.P. Recirculation after main ejector and G.S.C–I. 8

4. a) In a B.F.P., how axial thrust develops and the same is almost balanced in B.C.H. Explain with diagram. 8

b) What are the different zones of heat transfer in an indirect feed heater ? Why T.T.D. approaches negative with the increase of desuper heating zone ? Explain with diagram. 8

5. Write short notes on (any *four*) : 4×4=16

(a) N.P.S.H.

(b) Sub-Cooling

(c) Drip Pump

(d) Drift loss

(e) Warming up of B.F.P.

(f) Necessity of loops in Main ejector

PART–II

*Answer any **three** questions.*
Two marks reserved for neat sketch.

6. a) What are different forms of ash usually found in pulvesized fuel fired boiler. 2

b) Name different system of extraction of ash usually provided in different power stations. 3

c) Describe the system of intermittent extraction of bottom ash of a large coal fired boiler. 8

d) Describe starting sequence of above system. 3

7. a) What are the main sources of water of Indian power station ? 2

b) State how natural water gets contaminated. Name water impurities and also how quantity of impurities are reported. 4

c) What is the desirable input water quality of a DM plant ? 2

d) Describe how raw water is converted into DM input quality water. 8

8. a) What are soot blowers ? 2

b) What are essential parts of a typical soot blower. 4

c) State with short description different types of soot blowers used for cleaning different section of boiler surface. 6