20008

2008 PUNJAB TECHANICAL UNIVERSITY

B.E MANUFACTURING PROCESSES AND AUTOMATION ENGINEERING

POWER PLANT INSTRUMANTATION

TIME: 3 HOUR
MARK: 1000

PART A-(10*2=20 marks)

1. Define the role of boiler control.

2. What is meant by the term cogeneration?

3. Specify the device used for current and voltage measurement in power plant.

4. Why float type level measurement is not suitable for Boiler Drum level measurement?

5. Specify the sensor used for the measurement of oxygen in flue gas.

6. Mention the principle of ionization smoke detectors.

7. Define the term stoichiometric ratio.

8. List the parameter to be measured in Deaerator control.

9. Define the term vibration displacement.

10. What are the digital methods of speed measurement?

PART B-(5*16=80 marks)

11. (a) With a block diagram, explain operation of thermal power plant and mention the important parameters to be monitored in each blocks.

(OR)

(b) Draw and mention the function of Piping and Instrumentation diagram of a boiler system in a power plant.

12. (a) Specify the need of drum level measurement. Also explain the differential pressure method to measure the drum level in high pressure boiler.

(OR)

(b) List all the major temperature measurement points in a thermal power plant and also suggest suitable sensor for each points.

13. (a) List the various parameters to be monitor in feed water. Also explain the method of measuring pH value and Dissolved Oxygen content.

(OR)

(b) What is meant by the term chromatography and how it is performed for a sample for analysis purpose?

14. (a) With a block diagram, describe the function of a Distributed Control System for analysis purpose?

(OR)

(b) What is meant by the term oxygen limit control in boiler operation? How is it performed?

15. (a) List the various parameters need for Turbine Supervisory system. Also explain the technique for the measurement of the parameters.

(OR)

(b)Why is vibration measurement essential in Turbine control? Also explain the method of vibration measurement in steam turbine.