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Question Paper Code : 51521

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Seventh Semester

Electronics and Instrumentation Engineering

EI 2021/EI 701/EI 1001 A/10133 EIE 21 – POWER PLANT INSTRUMENTATION

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define cogeneration.
2. What is the advantage of Hydro power plant ?
3. Why float type level measurement is not suitable for boiler drum level measurement ?
4. How the frequency of power supply is measured in Digital form ?
5. Specify the role of Chromatography in Thermal power plant.
6. Name the different types of Pollution monitoring instruments in Thermal power plant.
7. What is furnace draft and how to quantify furnace draft.
8. What is deaerator and explain why it is required.
9. Mention the digital methods of measuring speed.
10. List the parameters to be monitored in Cooling system.

PART – B (5 × 16 = 80 Marks)

11. (a) Briefly explain the importance of instrumentation in nuclear power plant.

OR

- (b) Explain the applications of cogeneration in power plant.

12. (a) Classify the transducers based on Low, Medium and High temperature applications. Also list the major temperature measurement points and suggest suitable temperature sensors. **(16)**

OR

- (b) Explain the method of measuring smoke density in thermal power plant with a conceptual diagram. **(16)**

13. (a) (i) What are basic impurities in feed water of a boiler and how do you analyse these impurities? **(8)**

- (ii) What is pH meter and explain pH requirements at different points and how do you control the same? **(8)**

OR

- (b) (i) Explain how do you measure the air pollutants from a power plant and what are control measures adopted to reduce the same. **(8)**

- (ii) What is ultimate and proximate analysis of a fuel? How do you evaluate the ultimate analysis of a fuel and explain the working principle. **(8)**

14. (a) List the parameters to be measured in Flue gas of Boiler. Also explain the Oxygen Trim Control method to control the combustion.

OR

- (b) What are the parameters to be required for Feed Water Control? Also explain the three element method of feed water control with an instrumentation block diagram.

15. (a) State the importance of vibration analysis in Turbine. Also list the various techniques used for vibration measurement. Explain any one vibration measurement technique in detail.

OR

- (b) Why Temperature and Pressure need to be measured at various stages of steam turbine? Also mention the method of monitoring and control temperature in Steam turbine.