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Question Paper Code : 21415

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh Semester

Electronics and Instrumentation Engineering

EI 2021/EI 701/EI 1001 A — POWER PLANT INSTRUMENTATION

(Common to Instrumentation and Control Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the principle of Nuclear power generation.
2. Name the three basic cycle of a thermal power plant.
3. How the steam pressure measured in power plant?
4. Why instrument transformers are used for the measured of Current and Voltage in power plant?
5. What is the objective of Fuel Analysis?
6. Brief the importance of feed water Analysis.
7. What is meant by the term balanced draft in Boiler?
8. What is an electrical interlock?
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) Draw the Piping and Instrumentation diagram of a Boiler system in a thermal power plant with the functions of each unit.

Or

- (b) With a schematic diagram explain the operation of Pressurized Water Nuclear reactor and mention the important parameters to be monitored in Nuclear power plant.
12. (a) What is meant by Primary and Secondary transducers in Pressure measurement? Explain the pressure measurement of steam in Power plant.

Or

- (b) Why conventional float type drum level measurement is not suitable for Drum Level measurement in High Pressure boiler? Also explain any one method to measure boiler drum level in Thermal Power Plant.
13. (a) With a block diagram, explain the Gas chromatography. Also state the factors to be considered in Carrier Gas supply system.

Or

- (b) Define pH of a Solution. What are the design criteria of pH meters? Explain anyone type of pH meter arrangement uses in thermal power plant.
14. (a) Explain the three element control in High pressure boiler. Also List it's merits over two element control.

Or

- (b) What is the need of Air/fuel ratio control? What is meant by the term Oxygen trim control in Boiler? Explain the method of controlling the combustion by Oxygen trim control.
15. (a) State the important 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.