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Question Paper Code : 33445

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Seventh Semester

Electronics and Instrumentation Engineering

EI 1002 – POWER PLANT INSTRUMENTATION

(Common to Instrumentation and Control Engineering)

(Regulation 2004/2007)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by cogeneration?
2. How is nuclear reaction controlled in nuclear power plant?
3. What is the need of connecting thermocouples in series and parallel during temperature measurement?
4. How is the frequency of power supply measured in Digital form?
5. What is a pH meter?
6. How is the purity of steam determined?
7. Define stoichiometric ratio.
8. What is the function of deaerator?
9. Define the term vibration displacement.
10. What are the digital methods of speed measurement?

PART B — (5 × 16 = 80 marks)

11. (a) (i) With a neat sketch, explain the method of power generation in a steam power plant. (8)
(ii) Explain various processes happening in a boiler in a steam power plant. (8)

Or

- (b) With a neat layout diagram explain the function of a nuclear power plant. (16)

12. (a) Specify the need of drum level measurement. Also explain the differential pressure method to measure the drum level in high pressure boiler. (16)

Or

- (b) List all the major temperature measurement points in a thermal power plant and also suggest suitable sensor for each points. (16)

13. (a) Specify the role of Chromatography in Power plant. Also explain the method of Gas Chromatography.

Or

- (b) What are the methods used to detect oxygen content? Explain the operation of flue gas oxygen analyzer in boiler exhaust.

14. (a) Write short notes on the following :

- (i) Furnace draft and its control. (8)
(ii) Interlocks in boiler control. (8)

Or

- (b) Write short notes on :

- (i) Controlling air/fuel ratio. (8)
(ii) Pollution monitoring instruments. (8)

15. (a) (i) Why should the pressure of steam be raised in the boiler and turbine? Explain. (6)
(ii) Discuss in brief on the turbine-boiler monitoring and control schemes. (10)

Or

- (b) Write in brief about the following :

- (i) Cooling system. (8)
(ii) Shell temperature monitoring and control. (8)