R13

B.Tech III Year II Semester (R13) Regular & Supplementary Examinations May/June 2017
POWER PLANT INSTRUMENTATION
(Electronics and Instrumentation Engineering)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a) How wind energy is converted into electrical energy?
  (b) What do you understand by water hammer?
  (c) What do you mean by swelling effect of boiler drum level?
  (d) What is furnace draft control?
  (e) What does pH indicate?
  (f) What is the principle of operation of O_2 in flue gases?
  (g) How maintenance of measuring instruments is done?
  (h) What are interlocks for boiler operation?
  (i) What is lubricating oil temperature control?
  (j) How to measure speed of turbine?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   Explain the importance of instrumentation and control in power generation.
OR
3   Discuss about control rooms in power generation.

UNIT – II

4   Discuss about measurement of temperature, pressure and flow level in air fuel circuit.
OR
5   (a) With a neat diagram, explain about combustion control
    (b) Discuss about Boiler Drum Level control with a neat diagram.

UNIT – III

6   (a) With a neat diagram, explain about Gland Steam Exhaust Pressure Control.
    (b) Discuss about INLET and OUTLET measurements in turbines.
OR
7   (a) Discuss about condenser vacuum control in a gas/steam turbine.
    (b) Discuss about speed vibration shell temperature monitoring and control.

UNIT – IV

8   (a) Discuss about boiler efficiency and give necessary mathematical expressions for boiler efficiency.
    (b) Discuss about intrinsic and electrical safety in power plant management.
OR
9   (a) Explain about interlocks for boiler operation.
    (b) Discuss about distributed control systems in power plant management.

UNIT – V

10 (a) With a neat diagram, explain about infrared flue gas analyzer.
    (b) Discuss about dust monitor.
OR
11 (a) Discuss about conductivity meter.
    (b) Explain about carbon dioxide measurement.

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