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Name:  
Reg.No.

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2010

AI.04.805 – Power Plant Instrumentation and Control

Time: Three hours

Maximum: 100 marks

Answer *all* questions

**Part A**

- I. (a) Discuss the principle of solar power generation. What are the limitations?  
(b) Explain the role of condensers in power generating stations.  
(c) How smoke density measurement is carried out? Explain its relevance.  
(d) Which are the important electrical parameters to be measured in power plant?  
(e) Write a note on deaerator control.  
(f) Explain the effect of air fuel ratio on boiler heat losses.  
(g) Discuss the advantages and risks involved in nuclear power generation.  
(h) Explain the use of PLCs in power plant automation.

(8×5=40 marks)

**Part B**

- II. (a) Draw the schematic/building blocks of thermal power plant and explain the working. Also discuss the type of boilers which could be used.

*Or*

- (b) Explain the various material handling systems in practice. Mention their uses.

- III. (a) Explain two schemes for the measurement of steam pressure and temperature.

*Or*

- (b) Describe one scheme each for pH measurement and dissolved oxygen analyzing.

- IV. (a) Explain typical control loop in boilers. Discuss combustion control in detail.

*Or*

- (b) Describe the structure and role of distributed control system in power plants.

- V. (a) Explain the control and monitoring of speed, vibration shell temperature of turbines.

*Or*

- (b) Discuss hydroelectric power generation. How voltage and frequency are regulated here.

(4×15=60 marks)

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