

**Bachelor of Instrumentation and Electronics Engineering, Examination 2025  
(4<sup>th</sup> Year, 1<sup>st</sup> Semester)**

**Power Plant Instrumentation**

**Time: Three Hours**

**Full Marks: 100**

**[CO1: Answer any one question from question number 1 and 2]**

1. a) What are the advantages and disadvantages of thermal power plant?  
b) What are the factors affecting the efficiency of the thermal power plant?  
c) Discuss briefly on air pollution and water pollution caused by thermal power plants.  
(6+4+10)
2. Explain how cascade control scheme improves the performance of a simple set point control? Is ratio control a kind of cascade or feed forward control? Explain.  
(15+5)

**[CO2: Answer any three questions from question numbers 3-7]**

3. Draw the process flow diagram of steam and feed water cycle of a typical 210MW thermal power plant and explain the functions of economizer and the re-heater.  
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4. What are the limitations of a single element drum level control system? Explain with the loop diagram how 3-element drum level control system removes them.  
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5. Explain the deaerator level control scheme with suitable loop diagram.  
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6. Why purging is required before start-up the furnace? Explain the burner management system for a pulverized fuel fired boiler.

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7. Discuss the cross-limiting system in a combustion control system of a pulverized fuel fired boiler and explain the fuel flow control with suitable process and instrumentation diagram.

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**[CO3 and CO4: Question number 8 compulsory]**

8. Write short notes on any two of the followings ( Answer one question from a) and b) and other one question from c) and d)):

(2 x10)

- a) Electrostatic precipitator.
- b) Power plant safety.
- c) Three transmitter system with median selector unit.
- d) Explain briefly about fuel analyzer.