

Ref. No.: Ex/IEE/PE/B/T/315A/2025

Bachelor of Instrumentation and Electronics Engineering, Examination 2025
(3rd Year, 1st 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) Give the disadvantages of nuclear power plant.
c) List the factors to be considered for thermal power plant.
d) Why we can't completely depend on solar and wind power plant? Justify.
(6+5+4+5)
2. Explain the functions of a controller for water tank temperature control system with suitable control algorithm. Discuss the possible sensor signal conditioning circuit for measuring the temperature.
(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. Write down the basic thermodynamic cycle employed in a thermal power plant. In what way this cycle is modified and why?
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[Turn over

6. Draw the neat sketch of air and flue gas path in a pulverized coal fired boiler and explain the functions of different elements.

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7. Discuss the cross-limiting system in a combustion control system of a pulverized fuel fired boiler and explain the air 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) Discuss the overview of DCS.
 - b) Power plant safety.
 - c) Three transmitter system with median selector unit.
 - d) Explain briefly about fuel analyzer.