

(3 Hours)

[Total Marks: 80]

- N.B. (1) Question No.1 is **compulsory**.
 (2) Answer any **three** questions from Question Nos. 2 to 6.
 (3) Assume **suitable** data if **necessary**.
 (4) Draw neat diagram with proper labeling.
 (5) Figures on the right side indicate full marks.

- 1 Answer any **four**:-
- | | |
|---|---|
| (a) Justify-Distillation column control is considered to the most difficult task. | 5 |
| (b) Discuss the crystallization process with different regions. | 5 |
| (c) Explain the control parameters in gas turbine. | 5 |
| (d) Explain the need of safety interlock associated with boiler. | 5 |
| (e) Discuss design of hazard free industry. | 5 |
- 2 (a) Explain any two distillation column control strategies. 10
 (b) Explain the objectives of combustion control in Boiler. 5
 (c) How economy is improved using bypass control scheme for H.E. 5
- 3 (a) What is dryer? Explain atmospheric tray dryer control scheme with safety interlocks. 10
 (b) What is necessity of selective control scheme for evaporator, explain with diagram. 10
- 4 (a) With neat block diagram explain the process involved in refinery and also discuss the role of instrumentation engineer. 10
 (b) Explain the following processes: 10
 i. Penicillin-G production. ii. Milk pasteurization.
- 5 (a) Explain the process flow diagram in iron and steel industry. 10
 (b) Discuss the methods of super saturation in crystallization? Explain construction and operation of circulation magma crystallizer. 10
- 6 Write short notes (any TWO):- 20
 (a) Temperature control scheme for reactor.
 (b) Surge and its control techniques in compressor.
 (c) Furnace control scheme with interlocks.