

QP Code : 5866

(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.

(4) Figures on the right side indicate full marks.

- 1 Answer any **four**:-
 - (a) Explain one of the furnace control scheme with interlocks. 5
 - (b) Discuss the crystallization process with different regions. 5
 - (c) Explain the construction of 2:4 shell and tube H.E. 5
 - (d) Discuss design of hazard free industry. 5
 - (e) Explain the control parameters in gas turbine. 5
- 2 (a) Explain any two distillation column control strategies. 10
- (b) Justify-three point drum level control nullifies the effect of bubbling. 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) Define intrinsic safety and explain hazardous area classification as per IEC and NEC. 10
- (b) Explain the process of Penicillin-G production along with control scheme. 10
- 5 (a) What are the **methods** of super saturation in crystallization? Explain construction and operation of circulation magma crystallizer. 10
- (b) Explain the process flow diagram in iron and steel industry. 10
- 6 Write short notes (any TWO):- 20
 - (a) Temperature control scheme for reactor.
 - (b) Surge and its control techniques in compressor.
 - (c) Safety interlocks and burner management system.