

(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.



1. Answer any four of the following questions: - 20
- (a) What do you mean by runaway reaction?
  - (b) Explain with example use of safety interlock.
  - (c) Explain the hazard triangle.
  - (d) List primary and secondary products of refinery unit.
  - (e) Define shrinking and swelling effect in boiler.
2. (a) Classify crystallizers. Explain control scheme in circulating magma crystallizer in indirect heating. 10
- (b) Explain with neat sketch milk pasteurization process and its control. 10
3. (a) Draw surge characteristics. Explain any one method of surge control from Centrifugal compressor. 10
- (b) Explain the process of Penicillin-G production along with its control parameters. 10
4. (a) Explain column pressure control scheme for distillation column. 10
- (b) Draw and explain closed gas turbine control scheme. 10
5. (a) Explain hazardous area classification as per IEC & NEC standard. 10
- (b) Discuss feed forward and bypass control scheme of heat exchanger. 10
6. Write short note on- 20
- (a) Intrinsic safety
  - (b) Cascade control scheme for evaporator
  - (c) Fluidized bed dryer.
  - (d) Instrumentation used in Iron and steel industry