

B.E / sem VII / Inst / Ind. Process Control / May 2017

C.B.G.S.



Q.P. Code : 635502

(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:-

- (a) Discuss any one compressor control scheme. 5  
(b) Draw the process flow sheet symbol for 5  
(i) Distillation (ii) Dryer (iii) Crystallizer (iv) Boiler  
(c) Explain shrink and swell effect in relation to Boiler. 5  
(d) Explain the drying rate curve. 5  
(e) Explain with suitable example the use of safety interlocks in unit operation. 5
2. (a) What is inferential measurement for top and bottom product composition control of distillation column. 10  
(b) Discuss the use of baffles in heat exchanger unit with suitable diagram. Also draw and explain feed forward control scheme of H. E. 10
3. (a) List out the raw materials required for Penicillin-G production. Draw process flow diagram and explain production process for Penicillin-G along with measurement and instrumentation. 10  
(b) Explain the term 'runaway reaction'. Explain the cascade control with recirculated cooling to control the temperature of reactor. 10
4. (a) Explain the term, 'Boiler Combustion Efficiency'. Name the factors affecting efficiency and discuss Type-3 combustion control scheme. 10  
(b) Show with graph, influence of degree of super saturation on nucleation and growth rate. With suitable diagram explain circulating magma crystallizer with indirect heat. 10
5. (a) Explain the term Dryer. Draw and explain atmospheric tray dryer control scheme. 10  
(b) Define intrinsic safety. Explain hazardous area classification as per IEC and NEC standards. 10
6. Write comprehensive notes (any **two**) 20  
(a) Control for fired reboiler  
(b) Vacuum Distillation operation and control requirement  
(c) 80/20 rule in intrinsic safety circuit design.