E(Inst&Cont)/SEM-II(Choice Base)/Advanced Process Control & Automation / Nov. 2017
(CBSGS) to (Choice Base)

Q. P. Code: 24145

Total Marks: 80

(3 Hours)

Note:

1. **Question No.1 is compulsory**
2. **Solve any THREE questions out of remaining FIVE questions.**
3. **Figure to the right indicate full marks.**
4. **Assume suitable data if required.**

Q 1 Answer the following: (20)

a) Discuss safety integrity level with its significance.

b) Write difference between open and proprietary protocol

c) What do you meant by constraint? Explain its types with suitable example.

d) Explain SCADA applications in brief.

e) What is process modeling? Explain its need.

Q 2 a) Explain the procedure to design PLC based system. (10)

b) Draw and explain Safety life cycle approach in detail. (10)

Q 3 a) Select the appropriate control loop configuration for the following input output relationship: (10)

$$\bar{y}_{1(s)} = \frac{2}{(s^2 + 5s + 1)}\bar{m}_1 + \frac{1}{(0.1s + 1)}\bar{m}_2$$

$$\bar{y}_{2(s)} = \frac{-3}{(0.5s + 1)}\bar{m}_1 + \frac{10}{(7s + 1)}\bar{m}_2$$

b) Explain the term constraint control and SISO constraint control using suitable example. (10)

Q. 4 a) Explain steady state model of an evaporator. (10)

b) Discuss how HMI can be interfaced with PLC. (10)

Q. 5 a) Write short note on Devicenet (10)

b) Explain FISCO and FNICO concept. (10)

Q. 6 a) Explain risk graph method of SIL determination. (10)

b) Draw and explain generic architecture of DCS. (10)
