

**COLLEGE OF ENGINEERING, PUNE-5**  
(An Autonomous Institute of Govt. of Maharashtra)

**End Semester Exam**

**(IE 401) Process Instrumentation**

Programme: Final year Instrumentation & Control

Year: 2013-14

Semesters VII

Duration: 3 Hr.

Max. Marks: 60

Instructions:

1. Figures to right indicate full marks
2. All questions are compulsory
3. Assume suitable data and draw suitable diagram wherever required.

- Q.1 Answer the following questions 20**
- 1 How will you calculate phase shift of dead time?
  - 2 Explain the composition control with a suitable example? Comment on dead time of a system.
  - 3 Write a note on statistical Process Control.
  - 4 An integral controller is used for speed control with a set point of 12 rpm within the range of 10-15 rpm. The controller output is 22% initially. The constant  $KI = -0.15\%/sec$ . If speed jumps to 13.5 rpm, calculate the controller output after 2 sec for constant ep.
  - 5 What are the advantages of multiple speed floating control?
- Q.2 Answer the following questions**
- 1 What do you mean by RPG? Discuss the need with appropriate example. **5**
  - 2 How will you optimize boiler. **5**
- Q.3 Answer the following questions**
- 1 Draw and discuss the selective control scheme for evaporator. **5**
  - 2 How will you control the batch fluid bed dryer? **5**
- Q.4 Answer the following questions 10**
- It is desired to automate "Food and Beverages plant". Explain in chronological order the steps, unit operations and process data requirements to implement automation. Identify the critical loop in the process and

suggest appropriate automation strategy with neat sketch.

**Q.4**

**Answer the following questions**

- 1 It is require controlling the flow of the slurry in a plant. What are the points 7  
that you will consider while selecting appropriate valve and actuator for  
given application.
- 2 How will you test the capacity of the control valve? 3

**\*\*Best of Luck\*\***