

Total No. of Printed Pages:2

**SUBJECT CODE NO: H-410**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.E. (EEP/EE/EEE)**  
**Industrial Automation**  
**(REVISED)**

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

N.B

1. Q.1 & Q.6 are compulsory.
2. Solve any two questions from remaining for each section.
3. Solve total 3 – questions in each section.

**Section A**

- |     |                                                                                                                                                                                                                                                                                                            |    |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Q.1 | Solve <u>any five</u> :                                                                                                                                                                                                                                                                                    | 10 |
|     | <ol style="list-style-type: none"> <li>a) Define industrial automation.</li> <li>b) What is discrete variable?</li> <li>c) Draw basic control cycle diagram.</li> <li>d) How actuators are categorized?</li> <li>e) What is ladder diagram?</li> <li>f) What is role of actuator in automation?</li> </ol> |    |
| Q.2 | <ol style="list-style-type: none"> <li>a) Explain Hierarchy of automation in details.</li> </ol>                                                                                                                                                                                                           | 07 |
|     | <ol style="list-style-type: none"> <li>b) Differentiate between machine automation &amp; process automation, giving examples.</li> </ol>                                                                                                                                                                   | 08 |
| Q.3 | <ol style="list-style-type: none"> <li>a) How PLC can be used to protect AC motor from over loading? Explain with neat sketch.</li> </ol>                                                                                                                                                                  | 07 |
|     | <ol style="list-style-type: none"> <li>b) Describe features of SCADA system in details.</li> </ol>                                                                                                                                                                                                         | 08 |
| Q.4 | <ol style="list-style-type: none"> <li>a) Explain with example discrete process control.</li> </ol>                                                                                                                                                                                                        | 07 |
|     | <ol style="list-style-type: none"> <li>b) Explain significance of trending function of SCADA in automation.</li> </ol>                                                                                                                                                                                     | 08 |
| Q.5 | Write short notes <u>on any three</u>                                                                                                                                                                                                                                                                      | 15 |
|     | <ol style="list-style-type: none"> <li>a) Pneumatic actuators</li> <li>b) RS232 &amp; RS485</li> <li>c) MOD bus</li> <li>d) Gear Box actuators.</li> </ol>                                                                                                                                                 |    |

## Section B

- Q.6 Solve any five: 10
- What do you mean by H/W & S/W type interfaces?
  - How displays are categorized in DCS?
  - What is communication protocol?
  - What alarm functions are used in SCADA for substation?
  - Name the control technologies used in automation.
  - What are field buses in DCS?
- Q.7 a) Explain how 07
- Tangible user interface &
  - Tactile interface are functioning?
  - Explain working of multiplexes & their role in SCADA.
- b) Explain working of multiplexes & their role in SCADA. 08
- Q.8 a) Explain working of HMI with neat sketches. 07
- b) Explain SCADA communication. What are standard communication protocols? Discuss any one. 08
- Q.9 a) What is meant by distributed control system? Compare it with traditional control system? 07
- b) What is significance of Data High Ways in DCS? Explain in details. 08
- Q.10 Write short notes on any three 15
- Data Acquisition
  - Graphical user interface.
  - High Speed Inputs
  - Trending & archiving in SCADA.