


GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

(An Autonomous Institute of Government of Maharashtra)

National Highway No.6, JALGAON – 425 002

Phone No.: 0257-2281522

Website : www.gcoe.ac.in

Fax No.: 0257-2281319

E-mail : princoe@rediffmail.com


 Name of Examination : **Winter 2020** - (Preview)

 Course Code & Course Name : **ET404D - (Interdisciplinary Elective)-Industrial Automation**

 Generated At : **19-04-2022 10:35:06**

 Maximum Marks : **60**

 Duration : **3 Hrs**
[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

1) Solve any two sub-questions.

- a) What is industrial automation and control? What are the merits of an industrial automation system? [6]
- b) Explain the architecture and various levels of the industrial automation system with the help of a diagram. [6]
- c) Write a short note on
 - i. Types of Industrial automation [3]
 - ii. Basic elements of an automated system. [3]

2) Solve any two sub-questions.

- a) Enlist the different temperature sensors. And explain thermocouple with the help of a diagram. [6]
- b) Explain LVDT with the help of a diagram. [6]
- c) Write a short note on.
 - i. Generalized measurement system. [3]
 - ii. Humidity Measurement. [3]

3) Solve any two sub-questions.

- a) Explain the feed-forward control system with the help of a block diagram. [6]
- b) Explain the SCADA system with the help of a diagram. [6]
- c) Write a short note on.
 - i. PID control. [3]
 - ii. Split range control. [3]

4) Solve all sub-questions.

- a) Explain the architecture of PLC with the help of a diagram. [6]
- b) Explain computer numerical control machines with the help of a block diagram. [6]

5) Solve all sub-questions.

- a) Enlist the names of the flow control valves and explain the hydraulic actuator system with the help of a diagram. [6]
- b) Write a short note on.
 - i. Production control system. [3]
 - ii. Synchronous motor drives. [3]

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