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21MT53

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025

Industrial Automation

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. List and briefly explain the role of automation. (10 Marks)
- b. Explain the types of automation with a neat sketch. (10 Marks)

OR

- 2 a. List and explain the levels of automation. (10 Marks)
- b. Explain the basic elements of an automated system. (10 Marks)

Module-2

- 3 a. With a neat sketch, explain the different types of conveyors used in industry. (10 Marks)
- b. List the explain the principles of materials handling. (10 Marks)

OR

- 4 a. Explain with a neat sketch, industrial trucks used in material handling. (10 Marks)
- b. Explain the principle components in automatic identification technologies. (10 Marks)

Module-3

- 5 a. Explain with a neat sketch, types of automated assembly systems based on physical configuration. (10 Marks)
- b. Explain the elements of parts delivery system with a neat sketch. (10 Marks)

OR

- 6 a. List and explain the components of a manufacturing system. (10 Marks)
- b. Explain with a neat sketch, four categories of layout configuration in flexible manufacturing systems. (10 Marks)

Module-4

- 7 a. Explain the architecture of Supervisory Control And Data Acquisition (SCADA). (10 Marks)
- b. Analyse the leak flow studies of a pipeline. (10 Marks)

OR

- 8 a. Explain in detail about Direct Digital Control (DDC) with neat block diagram. (10 Marks)
- b. Define and analyse the role of RTUs in SCADA. (10 Marks)

Module-5

- 9 a. Explain the architecture of Local Control Unit (LCU). (10 Marks)
- b. Explain the following briefly: i) Profibus ii) Field bus. (10 Marks)

OR

- 10 a. Explain the generalized architecture of DCS with neat sketch. (10 Marks)
- b. Define and explain HART protocol. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.