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Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
Automation and Industrial Robotics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. State and explain the basic elements of an automated system. (10 Marks)
b. Compare between process industries versus discrete manufacturing industries. (10 Marks)

OR

- 2 a. With a neat sketch, explain levels of automation. (10 Marks)
b. What are sensors and actuators? Explain the different types of actuators. (10 Marks)

Module-2

- 3 a. Explain any two types of system configurations of automated production line. (10 Marks)
b. Explain the following :
(i) Rotary indexing machine.
(ii) Storage buffer. (10 Marks)

OR

- 4 a. Explain the two different types of Barcode technology in detail. (10 Marks)
b. Explain the following :
(i) RFID Technology
(ii) Optical Character Recognition (OCR) (10 Marks)

Module-3

- 5 a. Define Robot. Explain briefly about different robot configuration systems. (10 Marks)
b. Explain different industrial applications of robots. (10 Marks)

OR

- 6 a. State and explain the four robot control systems. (10 Marks)
b. What are end effectors? Explain the different types of grippers. (10 Marks)

Module-4

- 7 a. Explain briefly about description of a position and description of an orientation related to robots. (10 Marks)
b. Compare between translational operators and rotational operators. (10 Marks)

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.

OR

- 8 a. Explain the convention for affixing frames to links. (10 Marks)
b. Explain the following :
(i) Actuator space.
(ii) Joint space.
(iii) Cartesian space. (10 Marks)

Module-5

- 9 a. Explain the three categories of robot programming languages. (15 Marks)
b. Explain about teach by showing for a robot. (05 Marks)

OR

- 10 a. State and explain the requirements of a robot programming language. (10 Marks)
b. Explain the problems peculiar to robot programming languages. (10 Marks)

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