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18MT651

Sixth Semester B.E. Degree Examination, Feb./Mar.2022 Robotics & Automation

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With the help of a neat sketch, illustrate the Robot with all it's parts and their function in a Robotic system. (10 Marks)
- b. Explain briefly the different configuration of robots. (10 Marks)

OR

- 2 a. Explain the concept of degree of freedom with reference to Robot with a neat sketch and also illustrate the working wrist of polar co-ordinate robot. (10 Marks)
- b. Explain 5 different technical specification associated with robots. (10 Marks)

Module-2

- 3 a. With neat sketch, explain the working of any one type of sensors used in Robot and also describe it's application. (10 Marks)
- b. Explain the importance and hydraulic drive systems in robot and their advantages and limitations. (10 Marks)

OR

- 4 a. Describe the working of various types of magnetic sensors. (10 Marks)
- b. Describe the working principle of tactile sensors. (10 Marks)

Module-3

- 5 a. Discuss the design consideration and check list to be adopted in Grippers selection. (10 Marks)
- b. What is the use of end effectors and discuss on types of end effectors. (10 Marks)

OR

- 6 a. Explain the concept of force control in Robotics manipulators. (10 Marks)
- b. Explain with neat sketch the components of pneumatic force control. (10 Marks)

Module-4

- 7 a. Discuss on different controllers used in industrial automation. (10 Marks)
- b. Discuss on various safety measures to be considered in an industrial automation. (10 Marks)

OR

- 8 a. What are the difference between open loop and closed loop control system, illustrate with suitable examples. (10 Marks)
- b. With a neat sketch, explain the 3 levels safety systems used in Robot system. (10 Marks)

Module-5

- 9 a. Discuss on various storage systems used in industrial automation. (10 Marks)
- b. Explain the types of material handling system used in Industrial automation. (10 Marks)

OR

- 10 a. Explain the following:
(i) Pick and place operation. (10 Marks)
- (ii) Palleting and related operations. (10 Marks)
- b. Discuss in detail about material loading and unloading applications.

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