

2209T159

B.Voc Robotics and Automation
Subject: Industrial Robotics and Material Handling Systems
Subject Code: RA-602
Semester: Third
Session: September 2022
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This question paper consists of two sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

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SECTION -A (OBJECTIVE TYPE QUESTIONS)
(10 x 1 = 10 Marks)

- A What is an industrial robot?
- B What are the advantages of using robots in industry?
- C What are the major components of a robot?
- D What are different methods of image data compression in a robotic vision system?
- E What are the general characteristics of industrial work situations that tend to promote the substitution of robots for human workers?
- F What are the applications of industrial robots?
- G What is degree of freedom of a robot?
- H What is an end effector?
- I Define material handling.
- J What is the unit load principle?

SECTION -B (ESSAY TYPE QUESTIONS)
(5 x 5 = 25 Marks)

- Q1 Discuss different types of industrial robots.
- Q2 Explain the following in brief:
 - (i) General considerations in robotic material handling
 - (ii) Robot centered cell
- Q3 Explain the working of a robot vision system.

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- Q4 Discuss the application of robots in continuous arc welding and assembly operation.
- Q5 Discuss the factors that should be considered while designing the grippers.
- Q6 Discuss the different types of end effectors along with their uses.
- Q7 Discuss the various factors that influence the design of a material handling system.
- Q8 Discuss the following material handling systems:
 - (i) Industrial Trucks
 - (ii) Rail-Guided Vehicles

END OF PAPER