

III SEMESTER EXAMINATION, 2022 – 23
IInd yr. B.Tech. –Mechanical Engineering
Subject: Robotics & Control

Duration: 3:00 hrs**Max Marks: 100**

Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.

Q 1.	Answer any four parts of the following. a) What are the principles and strategies of automation? b) What are the challenges faced during automation? c) What are the methods of transporting workpieces on flow lines explain them. d) What is the term storage buffer used for an automated production line? e) What are the design and fabrication considerations in an automated flow line? f) How do you calculate assembly line balancing?	5x4=20
Q 2.	Answer any four parts of the following. a) Which method of line balancing is the most efficient method? Explain it. b) What are the four factors that favor the use of manual assembly lines? c) What are the controlling parameters of the vibratory feeder? d) Which assembly techniques can be selected in order to accomplish the automated assembly in less time? e) Why production rate inherently lower on a single-station assembly system than on a multi-station assembly system? f) Illustrate the role of automation in material handling?	5x4=20
Q 3.	Answer any two parts of the following. a) Define the 2 categories of conveyor systems in detail. b) List out the four basic components of nearly all automated storage retrieval systems? c) How carousel storage systems can improve storage efficiency? Explain.	10x2= 20
Q 4.	Answer any two parts of the following. a) Why the material handling is important in manufacturing system design? Explain. b) How does feedback affect the control system? Explain in detail. c) Examine the necessary elements of a feedback loop with a proper diagram.	10x2= 20
Q 5.	Answer any two parts of the following. a) What is the most common method to linearize non-linear functions? Explain in detail. b) Define feedback feed-forward control. What is the main problem with feed-forward control? c) Define the different tuning methods of a controller in detail.	10x2= 20
