

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 3171508****Date: 23/06/2023****Subject Name: Factory Automation****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1	(a) What are some challenges of implementing factory automation?	03
	(b) What are the components of an automated manufacturing system?	04
	(c) Explain levels of Automation with suitable example.	07
Q.2	(a) What is material handling in the context of industrial systems?	03
	(b) Describe manufacturing cells, and how are they used in automated manufacturing?	04
	(c) Briefly explain the principles of material handling system design? What are some important design considerations for material handling systems?	07
OR		
	(c) What are some commonly used automatic identification methods in material handling systems? What are some challenges associated with implementing automatic identification methods in material handling systems?	07
Q.3	(a) What are the different classifications of manufacturing systems?	03
	(b) Explain flexible manufacturing system (FMS), and what are its benefits?	04
	(c) Write a short note on: “Cellular Manufacturing”	07
OR		
Q.3	(a) What is quality control, and why is it important in manufacturing?	03
	(b) Discuss challenges associated with implementing an FMS?	04
	(c) Briefly explain Statistical Process Control (SPC) tools used in quality control?	07
Q.4	(a) What are the key components of an industrial control system?	03
	(b) Differentiate between process industries and discrete manufacturing industries?	04
	(c) What is continuous control, and how is it used in industrial control systems?	07
OR		
Q.4	(a) What are the main types of control used in process industries?	03
	(b) Explain feedback control, and how is it used in industrial control systems?	04
	(c) What is discrete control, and how is it used in industrial control systems?	07
Q.5	(a) What are the building blocks of automation systems?	03
	(b) What are some benefits of computer process control over traditional control methods?	04
	(c) Briefly explain SCADA system, and how is it used in automation systems?	07
OR		
Q.5	(a) What is a LAN, and how is it used in automation systems?	03
	(b) Discuss challenges associated with implementing computer process control systems.	04
	(c) Describe analog and digital I/O modules, and how are they used in automation systems?	07
