GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3171922   **Date:27-11-2024**

Subject Name: Automation in Manufacturing

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.**

Q.1	**(a)**	Enlist the various reasons for automation.	03
	(b)	What is automation? Give its classification.	04
	(c)	With a schematic diagram, explain automated manufacturing system in detail.	07
Q.2	**(a)**	Explain group technology with suitable examples.	03
	(b)	Explain flexible manufacturing system with a schematic diagram.	04
	(c)	Describe rank order clustering technique in automation.	07
		OR	
	(c)	Explain parts classification and coding system in group technology.	07
Q.3	**(a)**	Write down problems associated with the material handling system.	03
	(b)	Explain the types of flexibilities in FMS. State the factors on which these flexibilities depend upon.	04
	(c)	Enlist various types of rotary actuators and explain any two.	07
		OR	
Q.3	**(a)**	List out applications and advantages of flexible manufacturing system (FMS).	03
	(b)	Explain ASRS system used in FMS.	04
	(c)	Write a short note on automated guided vehicles (AGVS) associated with flexible manufacturing system (FMS).	07
Q.4	**(a)**	Define 1. Sensors 2. Actuators and 3. Transducers.	03
	(b)	Which parameters are to be considered for specification and selection of robot?	04
	(c)	Explain various methods of robot programming.	07
		OR	
Q.4	**(a)**	Differentiate between End Effectors and Manipulators used in robot.	03
	(b)	Explain the advantages, limitations and applications of robot.	04
	(c)	Explain about Robot control system in detail.	07
Q.5	**(a)**	What is modular automation?	03
	(b)	Write a short note on automated material handling system.	04
	(c)	Write a short note on Machine shop design in modular automation.	07
		OR	
Q.5	**(a)**	How automation affects on economy?	03
	(b)	Write a short note on CMM.	04
	(c)	Explain in detail the importance of automation in Indian industries.	07

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