

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VIII (New) EXAMINATION – WINTER 2019****Subject Code: 2181922****Date: 25/11/2019****Subject Name: Automation****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) State Asimov's Law of Robotics.	03
	(b) What are various transfer machines? Discuss.	04
	(c) Describe the Machine Vision techniques used in Robotics, with a neat block diagram.	07
Q.2	(a) Define the terms automation in broad sense. State the suitable reasons to automate the manufacturing process.	03
	(b) List the basic components of a pneumatic circuit. Explain any three of them.	04
	(c) Explain the various types of grippers in detail	07
	OR	
	(c) Explain the proximity and range sensors in detail.	07
Q.3	(a) Explain the USA principle automation with example.	03
	(b) State the different types of automation. Explain any two with example.	04
	(c) What are the factors to be considered for selecting a Robot? Explain it in detail.	07
	OR	
Q.3	(a) What are essential elements of hydraulic circuit design?	03
	(b) What is the role of PLC in Automation? Also explain the applications of PLC in automation with a suitable example.	04
	(c) Explain the diagram of robot construction made up of a series of joint-link combinations.	07
Q.4	(a) Explain CMM.	03
	(b) What are the four basic components of automated storage and retrieval system? Explain it.	04
	(c) Describe the application of robots with example.	07
	OR	
Q.4	(a) Why automation is necessary in Industry?	03
	(b) Write a note on the following components of a hydraulic circuit:	04
	i) 3-way valve hydraulic amplifier,	
	ii) Hydraulic accumulator and unloading valve,	
	(c) Draw a block diagram of microcontroller and describe the function of different elements of it.	07

- Q.5 (a) How can we perform the Break Even Analysis for automation? **03**
(b) List the different types of sensors in robotics. Describe the working of any five sensors with example. **04**
(c) Discuss the feasibility of automation in Indian market. Kindly state the merits and demerits also. **07**

OR

- Q.5 (a) What are the features of good automation? **03**
(b) Describe the working of microcontroller with example. **04**
(c) Describe the parameters and procedure set the automation in the Sheet metal processing. **07**

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