

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3171922****Date:15/12/2021****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.

MARKS

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|------------|--|-----------|
| Q.1 | (a) List out the various Reasons for automation. | 03 |
| | (b) Explain automation migration strategies. | 04 |
| | (c) What is automation? Explain types of automation. | 07 |
| Q.2 | (a) List out various application of group technology. | 03 |
| | (b) Define Key Machine and differentiate between group technology and cellular Manufacturing. | 04 |
| | (c) Explain OPTIZ classification and coding system. | 07 |
| OR | | |
| | (c) Explain types of part classification and coding systems used in group technology. | 07 |
| Q.3 | (a) Explain the basic components of FMS. | 03 |
| | (b) Explain the types of flexibilities in FMS. State the factors on which these flexibility depends. | 04 |
| | (c) Explain AGVS associated with FMS. | 07 |
| OR | | |
| Q.3 | (a) List out various components used in hydraulic and pneumatic system. | 03 |
| | (b) Explain ASRS system used in FMS. | 04 |
| | (c) List out various types of rotary actuators and explain any two in brief. | 07 |
| Q.4 | (a) Explain the different application of pneumatic and hydraulic system used in Automation. | 03 |
| | (b) Explain the advantages, limitation and application of robot. | 04 |
| | (c) Enlist and explain different elements of robot with neat sketch. | 07 |
| OR | | |
| Q.4 | (a) Differentiate between End Effectors and Manipulators used in robot. | 03 |
| | (b) Which parameters are to be considered for robot specification and selection of robot? | 04 |
| | (c) Explain various methods of robot programming. | 07 |
| Q.5 | (a) Explain flexible fixturing. | 03 |
| | (b) Explain in brief automated transfer machine and it's application. | 04 |
| | (c) Explain the various elements of CMM in brief. | 07 |
| OR | | |
| Q.5 | (a) What is modular automations? | 03 |
| | (b) Explain effect of automation on economy. | 04 |
| | (c) Explain scope of automation in Indian industries. | 07 |
