

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3171922****Date:20-01-2023****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) What is Automation. Classify it as per application. | 03 |
| | (b) Interpret Modular automations and its applications. | 04 |
| | (c) Explain in detail Automated manufacturing system with a diagram. | 07 |
| Q.2 | (a) Explain group technology with a suitable example. | 03 |
| | (b) Elaborate flexible manufacturing system with a diagram. | 04 |
| | (c) Illustrate part classification and coding system for any product. | 07 |
| OR | | |
| | (c) Describe rank order clustering techniques in automations. | 07 |
| Q.3 | (a) List out applications and advantages of flexible manufacturing system- FMS. | 03 |
| | (b) Explain cellular manufacturing system. | 04 |
| | (c) Illustrate types of FMS and its component with a sketch. | 07 |
| OR | | |
| Q.3 | (a) Derive problems associated with material handling system. | 03 |
| | (b) Describe material storage system. | 04 |
| | (c) Write short note on effect of automation on economics | 07 |
| Q.4 | (a) List out application of hydraulic and pneumatic systems. | 03 |
| | (b) Illustrate Hydraulic actuators with a sketch. | 04 |
| | (c) Write short notes on hydraulic system components. | 07 |
| OR | | |
| Q.4 | (a) Discuss about industrial robot application. | 03 |
| | (b) Illustrate Automated guided vehicles. | 04 |
| | (c) Describe functions, working and limitations of automated transfer machine. | 07 |
| Q.5 | (a) Define following terms:
Transducers, Sensors and Actuators | 03 |
| | (b) Interpret feasibility of automation in Indian industries. | 04 |
| | (c) Describe about industrial Robot in detail. | 07 |
| OR | | |
| Q.5 | (a) Explain coordinate measuring machine. (CMM) | 03 |
| | (b) Illustrate auto storage and auto retrieval system. | 04 |
| | (c) Elaborate in depth about Robot control system. | 07 |
