

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3172010****Date:12-12-2023****Subject Name: Automated 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? | 03 |
| | (b) Draw components of NC machine tool system and briefly discuss about it. | 04 |
| | (c) Write difference between NC, CNC and DNC. | 07 |
| Q.2 | (a) Enlist different types of guide ways. Explain any one with neat sketch. | 03 |
| | (b) Explain servomotor with their application. | 04 |
| | (c) Draw a neat sketch of recirculating ball screw. State its advantages. | 07 |
| | OR | |
| | (c) Explain following; | 07 |
| | (i) Automatic tool changer (ATC) in CNC machine, | |
| | (ii) Automatic pallet changer (APC) in CNC machine | |
| Q.3 | (a) Explain: fixed zero and floating zero point. | 03 |
| | (b) Explain difference between modal and non-modal codes | 04 |
| | (c) Explain the functions of the following G codes.
G81,G94,G02,G74,G78 | 07 |
| | OR | |
| Q.3 | (a) Define function of below M-code. (i) M05 (ii) M07 (iii) M09 | 03 |
| | (b) Define Robot. Write Advantages and disadvantages of robots. | 04 |
| | (c) Enlist and explain different elements of robot. | 07 |
| Q.4 | (a) Classify types of sensors. | 03 |
| | (b) What are the various types of grippers used in robot? Explain any one of them. | 04 |
| | (c) Explain forward and inverse kinematics in robot. | 07 |
| | OR | |
| Q.4 | (a) What are the objectives of FMS? | 03 |
| | (b) Explain technology required for FMS System. | 04 |
| | (c) Explain the basic components of FMS. | 07 |
| Q.5 | (a) What are the objectives of cellular manufacturing? | 03 |
| | (b) Explain Part classification and coding system. | 04 |
| | (c) Explain Rank Order Clustering Technique. | 07 |
| | OR | |
| Q.5 | (a) What do you mean by 'Key machine' concept in GT? | 03 |
| | (b) Explain Production Flow Analysis method. | 04 |
| | (c) List the types of manufacturing systems and compare each with respect to flexibility and production quantity | 07 |
