

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 712803N**Date: 19-06-2014****Subject Name: Product Automation and CNC Technology****Time: 02:30 pm - 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.

- Q.1 (a)** What is Automation? Differentiate between Automation and Mechanization. Explain in detail various strategies adopted for automation. **07**
- (b)** Automation is the key factor for industrial growth, Justify the statement giving suitable examples. **07**
- Q.2 (a)** Make a case study of implementing the automation system in automobile industries. **07**
- (b)** CNC Machines are encouraging unemployment. Comment on the statement with reference to socio-technical environment. **07**
- OR**
- (b)** CNC Machining centre is considered to be a highly productive machine. Give your justification **07**
- Q.3 (a)** Explain characteristics and scope of Mechanical, Electrical, Pneumatic, and Electronic and Hybrid automation systems with their comparative merits-demerits. **07**
- (b)** Discuss parameters in detail which are responsible for reducing/eliminating the activities of operator in CNC technology. Discuss future trends in manufacturing? **07**
- OR**
- Q.3 (a)** Elaborate in detail, factors which a production controller would consider while preparing a feasibility report to adopt CNC technology in the industry for the first time. Describe hardware configuration of a modern CNC system. **07**
- (b)** Explain the concept of adaptive controls and discuss ACC system diagram for turning center. **07**
- Q.4 (a)** Why is a reciprocating ball in screw universally used in actuation system of CNC machine tools? Explain with neat sketch. **07**
- (b)** Briefly describe the automatic tool changer used in CNC machining center. **07**
- OR**
- Q.4 (a)** Define interpolators. Describe the flow chart of software DDA interpolator for Linear interpolator and Circular interpolator. **07**
- (b)** Explain do loops, parametric sub routines and Macros used in CNC programming with suitable example. **07**
- Q.5 (a)** (1) Explain any four canned cycles with suitable examples. **07**
 (2) Explain Geometric and motion statements with suitable examples, giving their format.
- (b)** What are the auxiliary statements in APT language? Explain with suitable examples any four auxiliary commands. **07**
- OR**
- Q.5 (a)** Explain the programming of CNC Machining centre with suitable example. **07**
- (b)** Explain with neat sketch the working principle of wire cut EDM process, giving its process parameters and applications. **07**
