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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION - WINTER 2015

Subject Code: 172002 Date:7/12/2015

Subject Name: Automated Manufacturing I

Time: 10:30am to 1:00pm 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) The following component is to be made using a CNC turning centre equipped with a FANUC OT controller. Write a complete manual part program for machining of the component shown in figure.1. Take Raw material of size Φ146 x 210 mm. Limit maximum spindle speed to 3000 RPM.

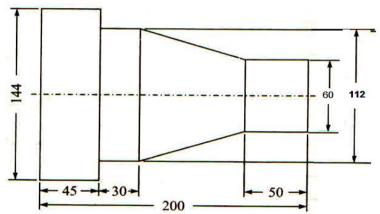


Figure 1(All Dimension are in mm)

(b) Write a part program to machine the symmetric profile as shown in fig.2. **07** Using G01 Linear interpolation. Raw material size: 100×100×5mm.

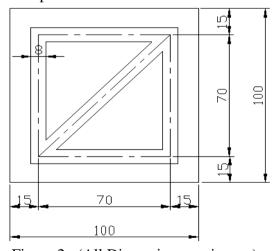


Figure 2. (All Dimensions are in mm)

- Q.2 (a) Difference between CNC lathe and a turning Center.
 - (b) What are the differences between NC, CNC and DNC machines? 07

OR

(b) Write and explain the standard format of G01 code in a CNC lathe. 07

07

| Q.3 | (a) | What is an automation migration strategy? Explain three phase of a typical automation migration strategy. | 07 |
|------------|------------|---|----------|
| | (b) | Explain the functions of the following G codes. | 07 |
| | | G00, G90, G21, G76 and G92 | |
| | | OR | |
| Q.3 | (a) | Differentiate between machine zero, part zero and programmers zero. | 07 |
| | (b) | The length of the storage aisle in an AS/RS = 250 ft and its height = 80 ft. suppose horizontal and vertical speeds of the S/R machine are 500 ft/min and 50 ft/min, respectively. The S/R machine requires 20 sec to accomplish a pick up –and –deposit operation. Find: (a) throughput for the aisle under assumptions that storage system utilization = 85% and a ratio of single-command to dual-command cycles of 4:1. | 07 |
| Q.4 | (a) (b) | State difference between programing using G71 and G72. What is process planning? Explain the generative type of CAPP system. OR | 07 07 |
| Q.4 | (a) (b) | Describe imbedded guide wires path ways and control vehicles in AGV. Difference between an AS/RS and a Carousel storage system. | 07 07 |
| Q.5 | (a) | What is the difference between point to point and continuous path control system in CNC machine? | 07 |
| | (b) | Explain the application and advantage of integration of CAQC with CAD/CAM systems. | 07 |
| | | OR | |
| Q.5 | (a) (b) | What is CMM? Explain different type of configuration in CMM. Define rapid prototyping. What are the different application of rapid prototyping | 07 04 |
