

Code No: C8006

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations March/April-2011

ADVANCED CNC TECHNOLOGY  
(MECHATRONICS)

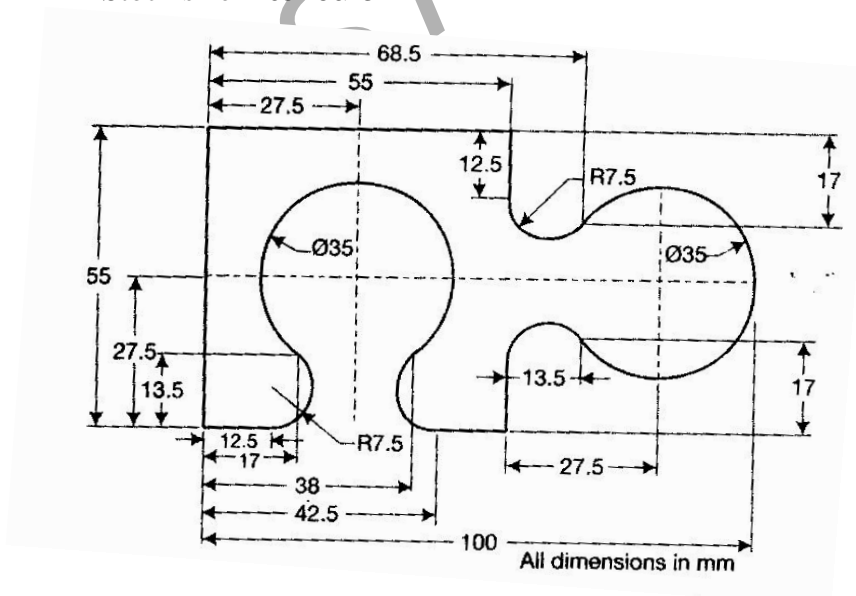
Time: 3hours

Max.Marks:60

Answer any five questions  
All questions carry equal marks

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1. a) Explain the principle of numerical control.  
b) What are the applications and where numerical control is most suitable?[12]
2. a) What are the design criteria to be used in designing CNC machine tools?  
b) A DC servo motor is coupled directly to a leadscrew which drives the table of an NC machine tool. A digital encoder, which emits 500 pulses per revolution, is mounted on the other end of the leadscrew. If the leadscrew pitch is 5 mm and the motor rotates at 600 rpm, calculate
  - (i) The linear velocity of the table
  - (ii) The BLU of the NC system
  - (iii) The frequency of pulses emitted by encoder [12]
3. a) Write manual part program using the ISO codes for the following component for external contour for the component shown in the figure.  
End mill cutter dia= 15 mm  
Feed=100 mm / min  
Speed = 800 rpm.  
Stock size=105x60x5



- b) What are the types of cutting tools used in CNC machine tools? Briefly explain. [12]

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4. a) Give a brief description of CNC machining centres.  
b) How does a tool change occur in a typical automatic tool changer? [12]
5. a) What are the functions served by DNC?  
b) What are the requirements for adopting DNC? [12]
6. a) List the advantage of adaptive control systems.  
b) Explain the adaptive control with constraints for turning. [12]
7. a) Why rapid prototyping is used?  
b) Explain the stereolithography technique used for rapid prototyping. [12]
8. a) What are the functions of a post processor?  
b) Discuss about the general structure of a post processor with a block diagram. [12]

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