R09

Code No: C8006

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
ADVANCED CNC TECHNOLOGY
(MECHATRONICS)

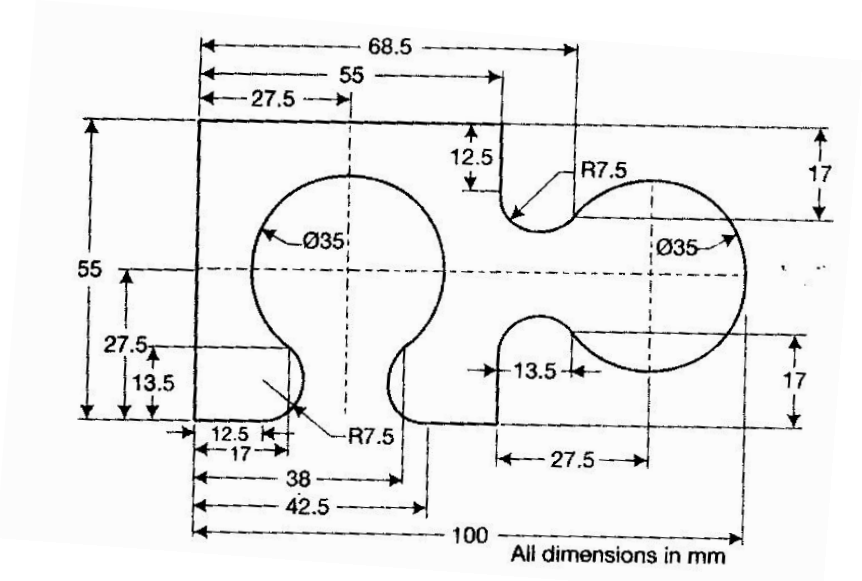
Time: 3hours **Max.Marks:60**

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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