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BME-004

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00615

Term-End Examination

December, 2014

BME-004 : CNC TECHNOLOGY AND PROGRAMMING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***seven*** *questions. All questions carry equal marks.*

1. (a) How is a CNC control system organised ? Briefly explain the functions of any three elements in the control. 5

(b) What are the requirements of tool pre-setting in CNC machining ? 5

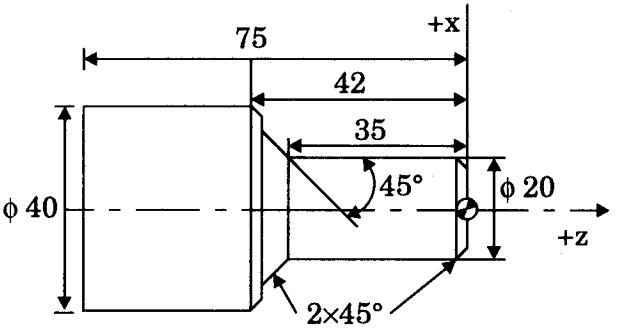
2. (a) Why is a recirculating ball in screw universally used in the actuation system in CNC machine tools ? Give the advantages of recirculating ball screws compared to the conventional Acme screws. 5

(b) What are the various operations that can be completed in a CNC turning centre ? 5

3. (a) What is the importance of preparatory functions in a CNC machining centre programming ? Give the description of any two functions and their application. 5

(b) What are the requirements for thread cutting in turning centres ? 5

4. For the components shown below (AISI 1045 steel), make a part program for machining on the CNC turning centre. 10



All dimensions in mm

5. (a) Explain the concept of post processor as used in computer aided part programming. 5

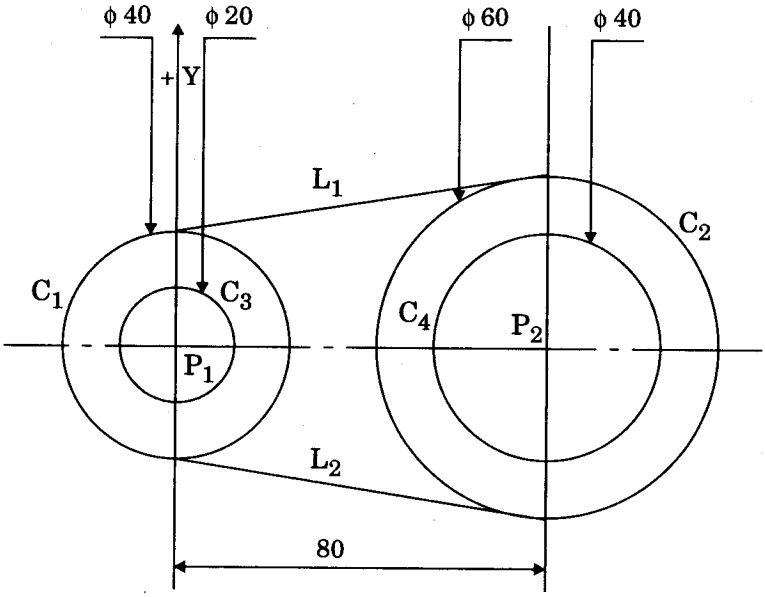
(b) What do you understand by the word DNC ? What are the situations where DNC will be beneficial ? 5

6. What is a modem ? Why is it necessary in certain applications ? Give the application of modem in CNC machine tool application. 10

7. (a) What is an AGU ? Explain the procedure used for guiding the AGV along its path. *5*

(b) What are the steps involved in developing a cell layout ? Briefly explain the functions. *5*

8. Write the geometry statements for the following part as shown in figure : *10*



All dimensions in mm

9. Explain briefly the need for maintaining tool supply in an FMS. What are the various tool monitoring systems available in an FMS ? Explain any one system in detail. *10*