No. of Printed Pages : 3

BME-004

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00303

Term-End Examination

December, 2016

BME-004 : CNC TECHNOLOGY AND PROGRAMMING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **seven** questions. All questions carry equal marks. Assume missing data, if any.*

1. (a) Describe the different types of production systems used in mechanical engineering industries. 5

   (b) With the help of a suitable block diagram, describe the principle of operation of an NC machine tool. 5

2. (a) Explain the general structure of the operation of a typical computerized numerical control machine tool. 5

   (b) With the help of suitable examples, differentiate point-to-point and continuous path tool movement in CNC machine tools. 5

3. (a) Give the examples of a few enhancements to programming that are available in the modern CNC control systems. 5

   (b) Name the feed drives that are used in CNC machine tools. Explain any one. 1+4=5

4. (a) Briefly state the purpose of the touch trigger probes. Write its applications with suitable example. *5*

(b) Briefly describe the process plan. *5*

5. (a) Explain the word address format that is generally used with CNC machining centres. *5*

(b) Explain the differences between absolute and incremental programming systems in CNC application. Write the suitability of the two systems mentioned above. *5*

6. The component to be machined is shown in Figure 1. Develop the part program without and with the use of canned cycle. *5+5*

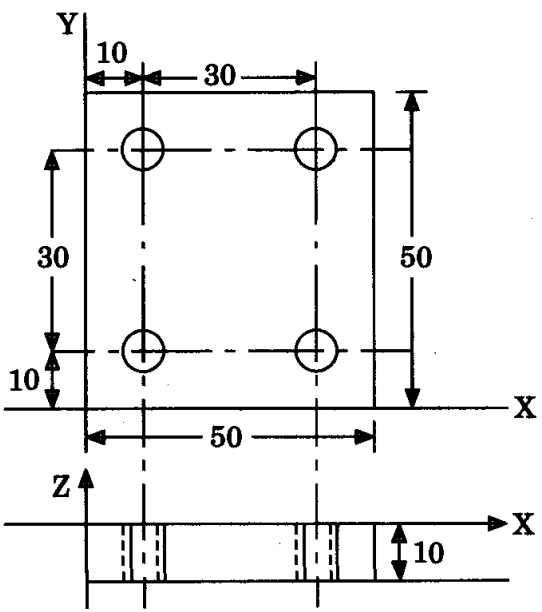

Figure 1

7. What are the preparatory and miscellaneous functions used in part programming ? Name any five G-codes and five M-codes with their functions. *5+5*

8. Write the APT geometry statement for the part as identified in Figure 2. *10*

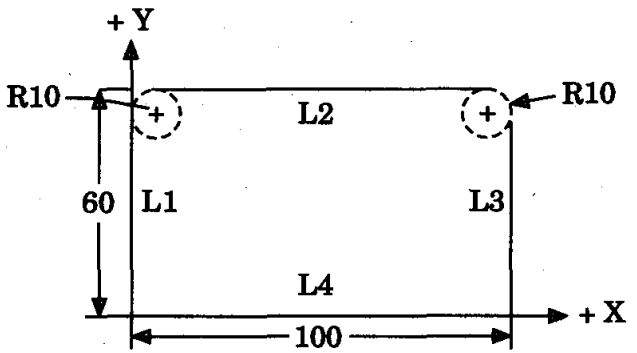

Figure 2

9. Explain the concept of post-processor as used in computer aided part programming. *10*

10. Write short notes on any ***two*** of the following : *2×5*

(a) MAP

(b) AGV

(c) Cell Layout