No. of Printed Pages : 3

**BME-057**

# DIPLOMA IN MECHANICAL ENGINEERING (DME)

## Term-End Examination

00734

## December, 2014

## BME-057 : CNC MACHINES

*Time : 2 hours* *Maximum Marks : 70*

***Note :*** *Answer any* ***seven*** *questions.*

**1.** (a) Differentiate between CNC and DNC control systems. 5

(b) What are the advantages of CNC machines over PLC machines ? 5

**2.** (a) Explain CNC machine with the help of a block diagram. 5

(b) What are the basic components of NC machines ? Explain. 5

**3.** (a) What are the advantages of ball screws over lead screws ? Explain. 5

(b) Explain about AC Servo motor and Stepper motors used in CNC machines. 5

4. (a) What are the different co-ordinate systems used in NC systems ? Explain. 5

(b) List the advantages and disadvantages of CNC machines. 5

5. (a) Explain the operation of DNC machine with the help of a sketch. 5

(b) What are the fundamental elements required for developing manual part programming ? 5

6. (a) Describe the punch card programming format in CNC machine with suitable examples. 5

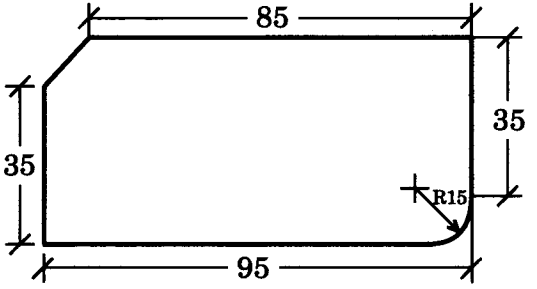
(b) Explain the different types of part programmes used in CNC machines. 5

7. (a) Describe about the Rapid positioning with suitable sketch. 5

(b) What are the parameters required for linear interpolation ? Explain with suitable examples. 5

8. (a) What are the design features of CNC machine tools ? 5

(b) Write a part programme for the component shown in figure below with cutter radius compensation and direction of cut programmed in anticlockwise direction. The cutter radius compensation is stored in DO2. z = 0 is at top surface of the workpiece. Feed = 65 mm/min. Speed = 1000 rpm. Depth of cut = 1000 rpm. *5*




**9.** (a) What are the requirements of work holding devices for CNC machines ? *5*

(b) How can you classify the tools on the basis of setting up of tools, tool construction and cutting tool materials. *5*

**10.** Write short notes on the following : *5+5=10*

(a) NC Systems

(b) Automatic Tool Changer