

Roll No .....

**MMCM-301(A)**

**M.E./M.Tech., III Semester**

Examination, June 2016

**CNC Machines (Elective-I)**

**Time : Three Hours**

**Maximum Marks : 70**

**Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Draw neat diagrams wherever required.

5. a) Compare manual part programming for Fanuc, Heidenhain and Sinumerik control system in CNC.  
b) Explain briefly, parametric programming in CNC.

6. a) Write G and M codes used in Sinumerik controller. State the basic structure of a part program for CNC lathe.  
b) What is APT? Discuss APT statements and commands.

7. a) State the classifications of cutting tool inserts for CNC Machines.  
b) State general problems encountered in maintenance of CNC Machines.

1. a) What are the economic benefits of CNC? Discuss its development.  
b) What do you mean by CNC controller? Discuss the features of Modern CNC controllers.

8. Write short note on following: (any two)  
a) Work Holding Devices in CNC  
b) Tool pre-set in CNC  
c) Part programming using CAD/CAM

2. a) Discuss types of elements used to convert the rotary motion to a linear motion in CNC.  
b) Discuss the configuration and design of CNC guideways.

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3. a) Compare the working and applications of stepper motor and servo motor used in CNC.  
b) Explain Laser interferometer in details.

4. Discuss the following :

- a) Axis Measuring System  
b) Synchro and Synchro-resolver  
c) Encoders