

**B.E. / B.Tech. DEGREE END SEMESTER EXAMINATIONS, April / May 2014**  
**MANUFACTURING ENGINEERING BRANCH**  
**V SEMESTER (REGULATIONS 2004 /2008)**

<sup>9305</sup>  
**MN 372 / MF -CNC TECHNOLOGY/ CNC MACHINING TECHNOLOGY**

Time: 3 Hours

Maximum: 100 Marks

**Answer ALL questions**

**PART A - (10 X 2 = 20 marks)**

1. State any four advantages of CNC machine tools.
2. List out any four CNC interpolation methods.
3. What is meant by bifurcated structure and why is it used?
4. Sketch and indicate the errors that can be compensated by using flexible couplings
5. How do you sense the direction of motion while using grating type transducer?
6. State true or false. Justify your answer. Stepper can be effectively used in CNC turning centre.
7. What is meant by cutter radius compensation: how is it programmed?
8. State the functions of the following G & M codes:  
G01                      G03                      M03                      M06
9. Briefly explain ISO classification of carbide inserts
10. State various weekly activities to be performed in the preventive maintenance of CNC machine tools.

**PART B – (5X16=80 Marks)**

- 11 i) Enumerate with neat sketch working of Ballscrew. State its advantages and limitations. (10)
- ii) Explain with neat sketches classification of CNC machines based on tool motion. (6)
- 12a i) Describe with neat sketch salient features of CNC machining centre. (8)
- ii) Enumerate with neat sketch working principle of CNC EDM. (8)
- (or)
- 12 b i) List out various types of antifriction LM guideways used in CNC slides.  
Describe any one antifriction LM guide way. (8)
- ii) Enumerate salient features of spindle assembly in CNC machine tool. (8)
- 13a i) Discuss advantages and limitations of using stepper motors as feed drives in CNC machine tool. (8)
- ii) A stepper motor has 200 step angles. Its output shaft is directly coupled with a leadscrew with pitch = 6 mm. The worktable of a positioning system is

driven by the leadscrew. The table must move a distance of 50 mm from its current position at a travel speed of 200 mm/min. Determine  
 How many pulses are required to move the table the specified distance? (4)  
 What is the required motor speed and pulse rate to achieve the table speed? (4)

(or)

13 b) Enumerate with neat sketches working principle of the following axis measuring system:

- (i) Angular gratings (8)
- (ii) Laser inductosyn (8)

14 a) What is meant by canned cycle? Describe with examples any three canned cycle.  
 (or)

14 b) Write complete CNC part program for the component shown in Fig. 14 b). Mention the assumptions made.

15a) Discuss the salient features any four cutting tool materials used in CNC machine tools.  
 (or)

15 b) Write short notes on

- i) Preset tooling
  - ii) Chucks
  - iii) Machine vice
  - iv) Throw away tips
- (4X4 =16)

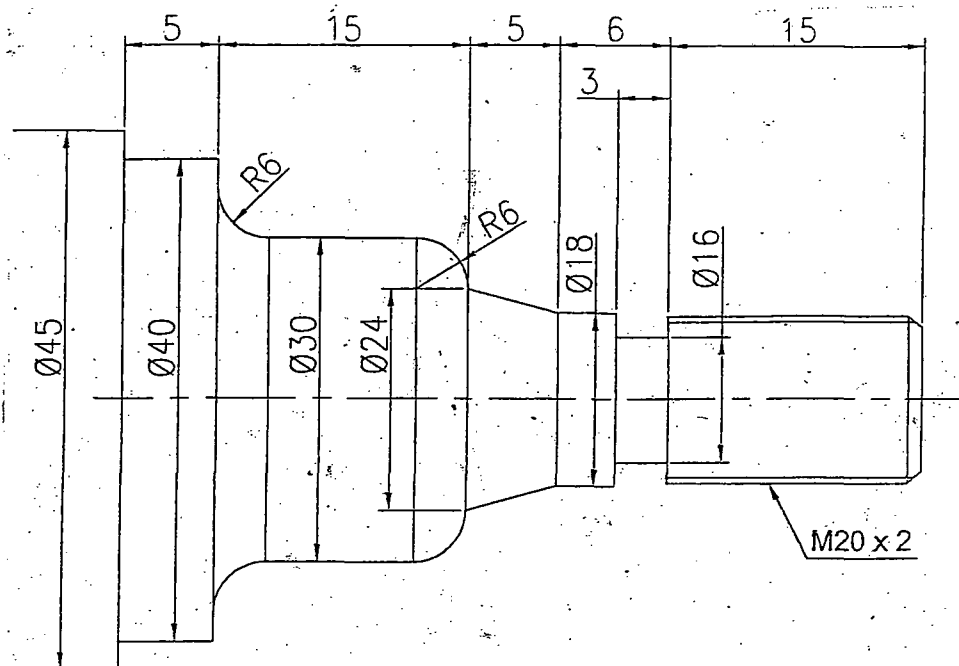


Fig Q14a

ALL DIMENSIONS ARE IN MM