

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



VII SEMESTER B.TECH (AUTOMOBILE ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: COMPUTER INTEGRATED MANUFACTURING [AAE 453]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ANY FIVE FULL the questions.
- Missing data may suitably assumed.
- Draw sketches in **PENCIL** only
- Define CIM. What are the factors involved while implementing CIM? What (05) objectives are derived by implementing CIM? Enumerate the advantages of CIM.
- **1B.** What is the significance of work cell control? Explain functions of work cell **(03)** control?
- **1C.** Explain the following syntax: G73 X0Y0 R.06 Z-1 Q.03 F20 G98. (02)
- **2A.** Define part programming. Explain the basic concept of part programming. **(04)** What are the steps to be followed for CNC programming and machining?
- **2B.** Write a program to machine the given component on turning centre as per **(06)** the given drawing in fig 2B.
- 3A. What is contact inspection? Explain the importance of coordinate measuring (05) machine (CMM) along with its four important components. Write the advantages of CMM.
- **3B.** Define material handling system. Enumerate and explain four different types **(05)** of material transport equipment.
- **4A.** Write a program to machine the given component on vertical machining **(06)** centre as per given drawing in fig 4A.
- 4B. What is 'stick slip' phenomenon? What is its implications in the manufacturing (04) process? Is it a challenge to the design engineers? What do you recommend to meet the challenge?
- **5A.** Write a program to machine the given component on vertical machining **(04)** centre as per given drawing in fig 5A.

- **5B.** Explain with neat block diagram On-line /in-process inspection, its benefits **(03)** and limitations.
- 5C. What is NC positioning system? What is the significance of control loops in (03) positioning system? How the closed loop control system has advantage over open loop control system?
- **6A.** Explain with example significance of static, dynamic and thermal load in the **(05)** design consideration of NC machines.
- **6B.** Define kinematics of manipulator. Explain with required derivation and with **(05)** neat sketch inverse kinematics.





Depth of contour=5mm, cut per pass=0.5mm

Fig 5A

Fig 2B



Fig 4A