# GUJARAT TECHNOLOGICAL UNIVERSITY
## M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

**Subject code: 1720802**                                  **Date: 31-12-2012**
**Subject Name: Computer Aided Manufacturing**
**Time: 10.30 am – 01.00 pm**                              **Total Marks: 70**
## Instructions:
  1. **Attempt all questions.**
  2. **Make suitable assumptions wherever necessary.**
  3. **Figures to the right indicate full marks.**

**Q.1** **(a)** Write in brief different CAM softwares available in Mechanical **07** engineering with its specifications and advantages.
  **(b)** Compare and contrast FMC and FMS. **07**

**Q.2** **(a)** What is a CIM wheel? Discuss its strengths and weaknesses as an **07** elucidator of CIM's scope.
  **(b)** With neat sketches explain types of tape readers used in NC machine. **07**
  **OR**
  **(b)** Describe in brief the purpose and importance of acceptance testing to **07** FMS success.

**Q.3** **(a)** Why is feedback necessary in machine tools? Discuss the methods used **07** for position and velocity feedback in CNC machines.
  **(b)** Prepare a manual part program to drill five holes by CNC machine for **07** the component as shown in figure 1 using subroutine.
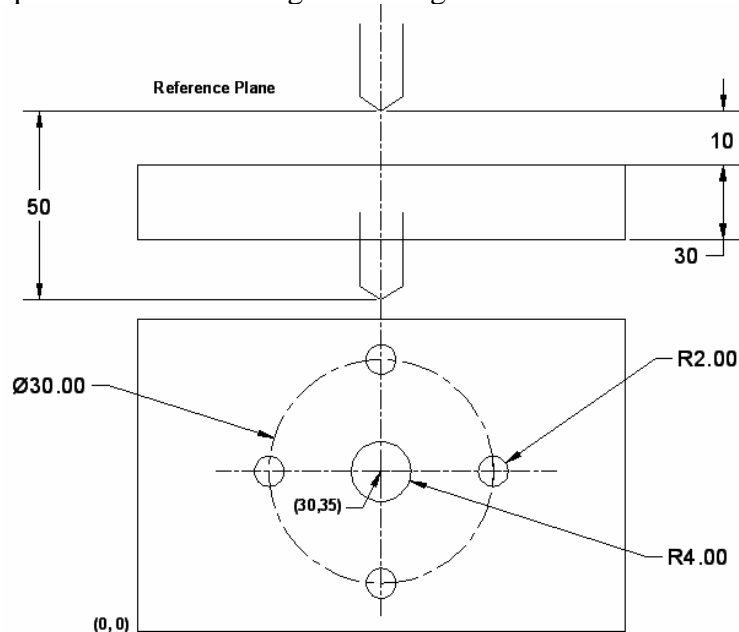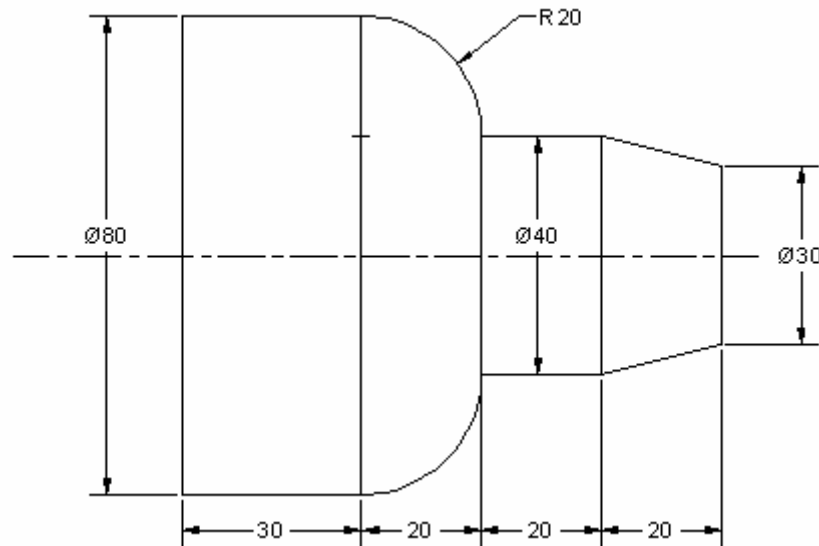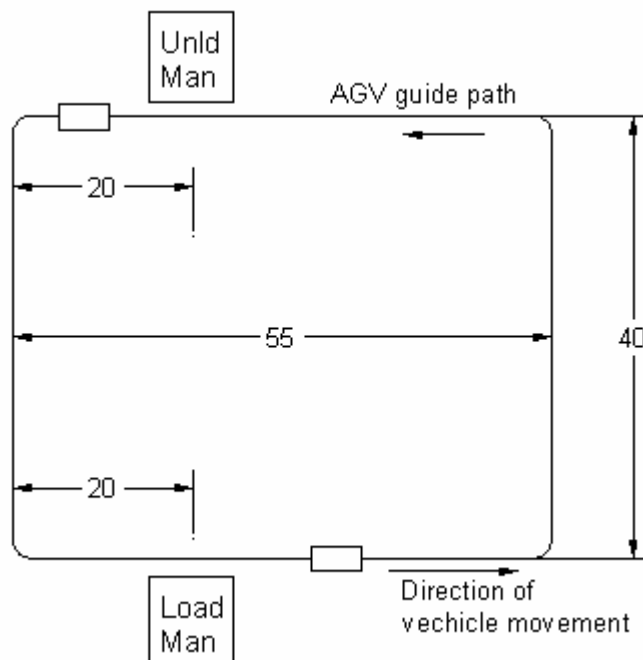


Figure 1
**OR**
**Q.3** **(a)** What are the different statements used to write a part programme using **07** APT? Discuss each statement with the help of suitable example.
  **(b)** For CNC lathe machine, prepare a manual part programming for the **07** component shown in Figure 2.

Figure 2

**Q.4** **(a)** Define AS/RS. Explain its types and applications in FMS.  **07**

**(b)** Given the AGVS layout shown in Figure 3. Vehicles travel **07** counterclockwise around the loop to deliver loads from the load station to the unload station. Loading time at the load station = 0.75 min and unloading time at the unload station = 0.50 min. It is desired to determine how may vehicles are required to satisfy demand for this layout if a total of 40 del/hr must be completed by the AGVS. The following performance parameters are given : vehicle velocity = 50 m/min, availability = 0.95, traffic factor = 0.90 and operator efficiency does not apply. Determine (a) travel distances loaded and empty, (b) ideal delivery cycle time and (c) number of vehicles required to satisfy the delivery demand.



Unld = Unload, Man = Manual operation
Figure 3

**OR**

**Q.4** **(a)** Write short note on – "Fixture considerations in FMS environment".  **07**

**Q.4** **(b)** Name the most common types of automated deburring systems used in **07** FMS. Explain each in details.

2

**Q.5** **(a)** Explain the role of a communications matrix in highlighting the **07**
communication needs of CIM.
**(b)** Describe the characteristics of various logic families. **07**

**OR**

**Q.5** **(a)** Explain the meaning of the terms data, database, DBMS and RDBMS. **07**
**(b)** Explain steps involved in CAD to CAM integration. Justify the same **07**
with case study.

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