

Seat No: _____

Date: _____

GANPAT UNIVERSITY
B. Tech. Sem. VIII Mechatronics Engineering
Regular Examination May- June: 2013
MC 802 Computer Integrated Manufacturing

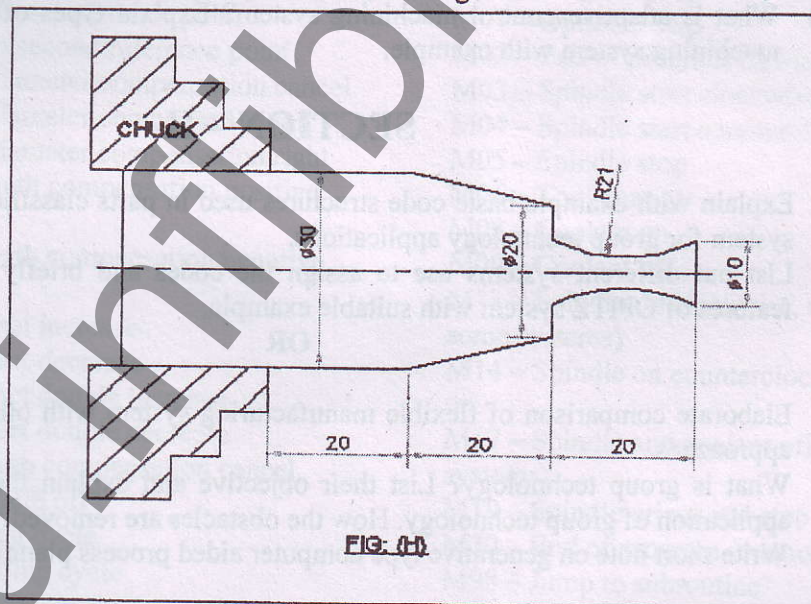
[Time: 3 Hour]

[Total Marks: 70]

- Instructions:**
1. Attempt all questions.
 2. Assume suitable data if necessary.
 3. Figures to the right indicate full marks

SECTION – I

- Que. 1** 12
- (a) Define computer integrated manufacturing. Explain the roll of computers, integration and manufacturing to develop CIM system with appropriate example.
- (b) List out the objectives of computer integrated manufacturing along with its accepted definition.
- (c) Schematically elaborate the computer integrated manufacturing wheel concept.
- OR**
- Que. 1** 12
- (a) Elaborate the nature and role of major elements of computer integrated manufacturing system.
- (b) Explain in detail the major area of applications of computer integrated manufacturing system.
- Que. 2** 11
- (a) Write a program of CNC turning centre for following component shown in fig Raw Material Size : 30 ϕ mm X 80 mm Long



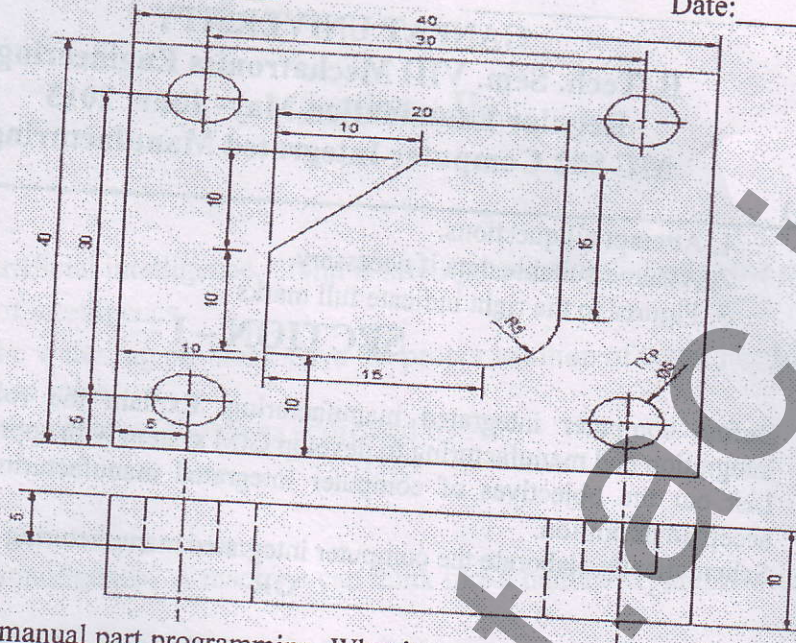
- (b) List out modern features of CNC machines and explain mirror imaging & polar rotation

OR

- Que. 2** 11
- (a) Write a program of CNC machining center for following component Raw material size : 40mmX 40 mm X 10 mm.

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- (b) Define manual part programming. What is meant by tool offset, tool length offset and cutter diameter compensation?

Que. 3 Attempt any Three.

- (a) What is numerical control? Explain basic components of numerical control machine tools. 12
- (b) Write short note on DNC machine.
- (c) With neat sketch explain absolute dimensioning and incremental dimensioning.
- (d) What is adaptive control machining system? Explain types of adaptive control machining system with example.

SECTION – II

Que. 4

- (a) Explain with example basic code structures used in parts classification and coding system for group technology applications. 12
- (b) List out different systems use to assign the codes and briefly elaborate all the features of OPITZ system with suitable example.

OR

Que. 4

- (a) Elaborate comparison of flexible manufacturing system with other manufacturing approaches. 12
- (b) What is group technology? List their objective and explain the obstacles to the application of group technology. How the obstacles are removed?
- (c) Write short note on generative type computer aided process planning system.

Que. 5

- (a) In automated material handling system what is automated guided vehicle systems and discuss different type of automated guided vehicle systems with their major advantages. 11
- (b) Define machine flexibility and product flexibilities. What are the factors on which they depend? How they are measured and attained?

Que. 5

OR

- (a) Elaborate flexibility concept with different approaches along with different levels of manufacturing flexibility focusing on flexible manufacturing system. 11
- (b) Briefly elaborate major elements of flexible manufacturing systems.

Que. 6

12

- (a) What is AS/RS and explain its application in manufacturing industries.
 (b) Describe relationship between product variety and production quantity with example?
 (c) With the help of neat sketches explain model of computer aided process planning system with its architecture.

PREPARATORY FUNCTIONS (G CODES):

G00 – Rapid transverse positioning
 G01 – Linear interpolation (federate movement)
 G02 – Circular interpolation clockwise
 G03 – Circular interpolation counterclockwise
 G04 – Dwell
 G10 – Tool length offset value
 G17 – Specifies X/Y plane
 G18 – Specifies X/Z plane
 G19 – Specifies Y/Z plane
 G20 – Inch data input (on some systems)
 G21 – Metric data input (on some systems)
 G27 – Reference point return check
 G28 – Return to reference point
 G29 – Return from reference point
 G30 – Return to second reference point
 G40 – Cutter diameter compensation cancel
 G41 – Cutter diameter compensation left
 G42 – Cutter diameter compensation right
 G43 – Tool length compensation positive direction
 G44 – Tool length compensation negative direction
 G45 – Tool offset increase
 G46 – Tool offset decrease
 G47 – Tool offset double increase
 G48 – Tool offset double decrease
 G49 – Tool length compensation cancel
 G80 – Canned cycle off
 G81 – Std. drilling cycle
 G82 – Dwell drilling cycle
 G83 – Peak drilling cycle
 G84 – Fine boring cycle

G85 – Boring cycle (feed return to reference level)

G86 – Boring cycle (rapid return to reference level)

G87 – Back boring cycle

G88 – Boring cycle (manual return)

G89 – Boring cycle (dwell before feed return)

G90 – Specifies absolute positioning

G91 – Specifies incremental positioning

G92 – Program absolute zero point

G98 – Return to initial level

G99 – Return to reference (R) level.

MISCELLANEOUS (M) FUNCTIONS:

M00 – Program stop

M01 – Optional stop

M02 – End of program (rewind tape)

M03 – Spindle start clockwise

M04 – Spindle start counterclockwise

M05 – Spindle stop

M06 – Tool change

M08 – Coolant on

M09 – Coolant off

M13 – Spindle on clockwise, coolant on (on some systems)

M14 – Spindle on counterclockwise, coolant on

M17 – Spindle and coolant off (on some systems)

M19 – Spindle orient and stop

M30 – End of program, memory reset

M98 – Jump to subroutine

M99 – Return from subroutine

 END OF PAPER
