Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIIth SEMESTER–EXAMINATION – MAY/JUNE- 2012

Subject code: 172501 **Date: 24/05/2012**

Subject Name: Computer Aided Manufacturing

Time: 02:30 pm – 05:00 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)**	Justify the role of CAM in present day competitive manufacturing that has emerged out in Indian industries.	**07**
	(b)	Define NC, CNC and DNC machine. Write the advantages and disadvantages of CNC machines.	**07**
Q.2	**(a)**	Explain various stages involved with NC manufacturing. How do they differ from conventional manufacturing?	**07**
	(b)	What do you understand by NC coding? Explain the ISO and EIA standard codes for NC coding.	**07**
		OR	
	(b)	Explain the construction and working of an incremental optical encoder with the help of neat sketch.	**07**
Q.3	**(a)**	What does component drawing instruction decide? List type of formats used for NC/CNC programming.	**07**
	(b)	Why feedback necessary in machine tools? Discuss the methods used for position and velocity feedback in CNC machines.	**07**
		OR	
Q.3	**(a)**	Explain with neat Axis Identification in NC/CNC machines. Draw Axis Identification for lathe and milling machines.	**07**
	(b)	Prepare the manual part programming for components shown in fig.1	**07**
Q.4	**(a)**	Explain the role of Mechatronics in manufacturing. Write its advantages and disadvantages.	**07**
	(b)	Define Robot. Explain in brief the factors to be considered before introduction of robot in an organization.	**07**
		OR	
Q.4	**(a)**	Define CIM .Explain the various elements of CIM.	**07**
	(b)	List the CIM Hardware and software. Write the benefits of CIM.	**07**
Q.5	**(a)**	What is FMS? Discuss suitability of FMS and Problem faced in implementing FMS.	**07**
	(b)	Explain AGVs with neat sketch.	**07**
		OR	
Q.5	**(a)**	What is CAPP? Explain in detail.	**07**
	(b)	What is Rapid Prototyping? Explain Selective Laser Sintering.	**07**

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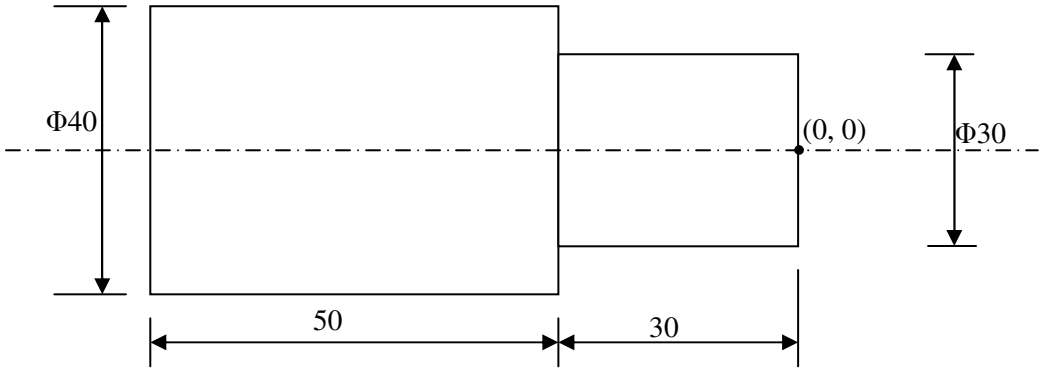
Fig-1



G-Code

G00 positioning (rapid traverse)
G01 linear interpolation (feed)
G02 circular interpolation CW
G03 circular interpolation CCW
G04 dwell
G07 imaginary axis designation
G09 exact stop check
G10 offset value setting
G17 XY plane selection
G18 ZX plane selection
G19 YZ plane selection
G20 input in inch
G21 input in mm
G22 stored stroke limit ON
G23 stored stroke limit OFF
G27 reference point return check
G28 return to reference point
G29 return from reference point
G30 return to 2nd, 3rd & 4th ref. Point
G31 skip cutting
G33 thread cutting
G40 cutter compensation cancel
G41 cutter compensation left
G42 cutter compensation right
G43 tool length compensation + dir
G44 tool length compensation - dir
G49 tool length compensation cancel
G45 tool offset increase
G46 tool offset decrease
G47 tool offset double increase
G48 tool offset double decrease
G50 scaling OFF
G51 scaling ON
G52 local coordinate system setting
G54 work coordinate system 1 select
G55 work coordinate system 2 select
G56 work coordinate system 3 select
G57 work coordinate system 4 select
G58 work coordinate system 5 select

G59 work coordinate system 6 select
G60 single direction positioning
G61 exact stop check mode
G64 cutting mode
G65 custom macro simple call
G66 custom macro modal call
G67 custom macro modal call cancel
G68 coordinate system rotation ON
G69 coordinate system rotation OFF
G73 peck drilling cycle
G74 counter tapping cycle
G76 fine boring
G80 canned cycle cancel
G81 drilling cycle, spot boring
G82 drilling cycle, counter boring
G84 tapping cycle
G85,G86 boring cycle
G87 back boring cycle
G88,G89 boring cycle
G90 absolute programming
G91 incremental programming
G92 programming of absolute zero point
G94 per minute feed
G95 per revolution feed
G96 constant surface speed control
G97 constant surface speed control cancel
G98 return to initial point in canned cycle
G99 return to Ref point in canned cycle

M-Code
M00 program stop
M01 optional stop
M02 end of program (no rewind)
M03 spindle CW
M04 spindle CCW
M05 spindle stop
M06 tool change
M07 mist coolant ON
M08 flood coolant ON
M09 flood coolant OFF
M10 Clamps on
M11 Clamps off
M19 spindle orientation ON
M30 end program (rewind stop)
M98 call sub-program
M99 end sub-program