

JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End-Term Examination, November 2016
B. Tech. in Mechanical Engineering, Semester VII

Roll No.....

ME702: CAD-CAM

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	Consider the following statements regarding NC machine tools 1. They reduce non-productive time, 2. They reduce fixturing 3. They reduce maintenance cost Which of these statements are correct? a) 1, 2 and 3 b) 1 and 2 c) 2 and 3 d) 1 and 3	
ii.	Machining center is a) an automatic tool changing unit b) a group of automatic machine tools c) a next logical step beyond NC machine d) an NC machine tool	
iii.	In tape preparation for an NC machine tool the code S 624 would represent spindle speeds of a) 624 rpm, 240 rpm and 2346 rpm b) 624 rpm and 240 rpm c) 624 rpm, and 246 rpm d) 240 rpm and 246 rpm	
iv.	In the following geometric modelling techniques which are not three-dimensional modelling? a) Wireframe modelling b) Drafting. c) Surface modelling d) solid modelling	
v.	Transfer machines can be defined as a) Material processing machines b) Material handling machines c) Material processing and material handling machines d) Component feeders for automatic assembly	
vi.	NC counterling is an example of a) continuous Path positioning b) point-to-point positioning c) absolute positioning d) incremental positioning	
vii.	Locating devices are classified as: a) text input devices b) Graphics input devices c) both a & b d) none of the above	
viii.	In CNC program block, N002 G02 G91 X40 Z40 ..., G02 and G91 refer to a) Circular interpolation in CCW direction and incremental dimension b) Circular interpolation in CCW direction and absolute dimension c) Circular interpolation in CW direction and incremental dimension. d) Circular interpolation in CW direction and absolute dimension	

ix.	In a CAD package, mirror image of a 2D point P(5, 10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be a) (7.5, 5) b) (10, 5,) c) (7.5, -5) d) (10, -5)	
x.	Economy of material handling can be achieved by a) employing gravity feed movements b) minimizing distance of travel c) by carrying material to destination without using manual labour d) all of the above	
Q.1B	Short answer type questions (4 questions @ 2.5 marks)	10
a)	List the advantages of CNC and DNC	
b)	Compare Machine language Vs assembly language	
c)	With block diagram show the relationship of CAD/CAM data base to CAD and CAM.	
d)	List and describe in short the benefits of adaptive control machining.	
Q.2A	List and explain the common peripheral devices used for computer Input/Output.	05
Q.2B	What is CAD and what are its applications and benefits?	05
Q.3A	Explain the general design process used in CAD	05
Q.3B	Explain B-rep and C-rep approach of solid modeling in detail	05
Q.4A	a) How do you define line (geometry type) by different methods in APT b) Differentiate between following: i) Fixed zero and floating zero positioning ii) Absolute and incremental positioning	06 04
OR		
Q.4B	A line is defined by its end points (0, 0) and (2, 3) in a two dimensional graphics system. Express the line in matrix notation and perform the following transformations on this line a) Scale the original line by a factor of 3.0 in the X-direction and 2.0 in the Y-direction b) Translate the original line by 2.0 units in the X-direction and 2.0 units in the Y-direction c) Rotate original line by 45° about the origin d) Plot the original line and each of the above transformations	10
Q.5A	Explain with schematic diagram working principle of scanning laser beam system.	05
Q.5B	How computer integrated manufacturing systems (CIMS) will help in manufacturing industries discuss?	05
Q.6A	List the different types of AGVS. When they are used?	05
Q.6B	Compare Flexible Manufacturing Cell (FMC) Vs. Flexible Manufacturing System (FMS)	05
Q.7A	Explain DNC with behind-the-tape reader configuration and DNC with special machine control unit.	05
Q.7B	a) Explain the importance of computer aided process planning? Compare generative process planning with traditional process planning b) Why is part classification and coding required in GT. Explain OPTIZ system of coding?	05 05

OR

- Q.7B Name the four types of statements in a complete APT part program. Prepare part program for geometry description of the contour shown in the figure 2 below 10
- Q.8 Write complete part program of a component (Fig.1) for machining on a lathe. This part is to be machined from a rolled stock of 40 mm diameter. 15
- Assumptions:
1. Absolute programming,
 2. Spindle speed is 1000 rpm
 3. D code is used for memory
 4. Feed rate is in mm/min
 5. Home position of the machine is 250, 350

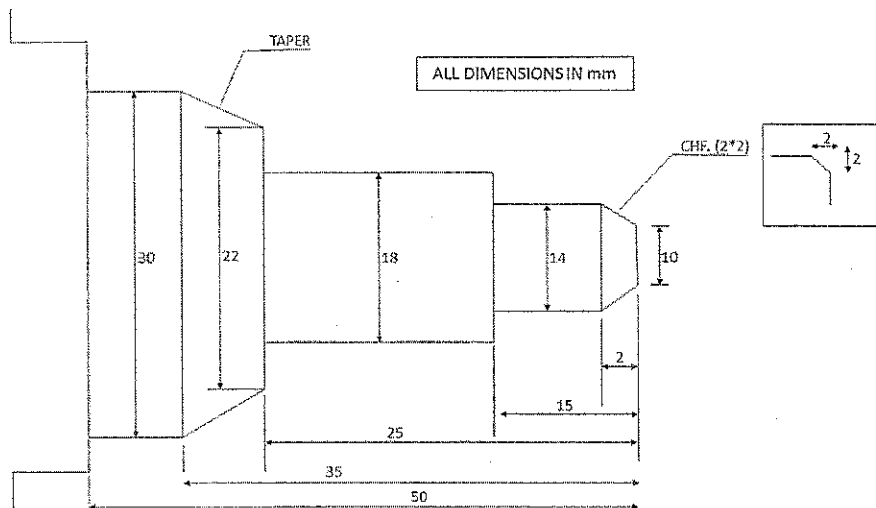


Fig. 1

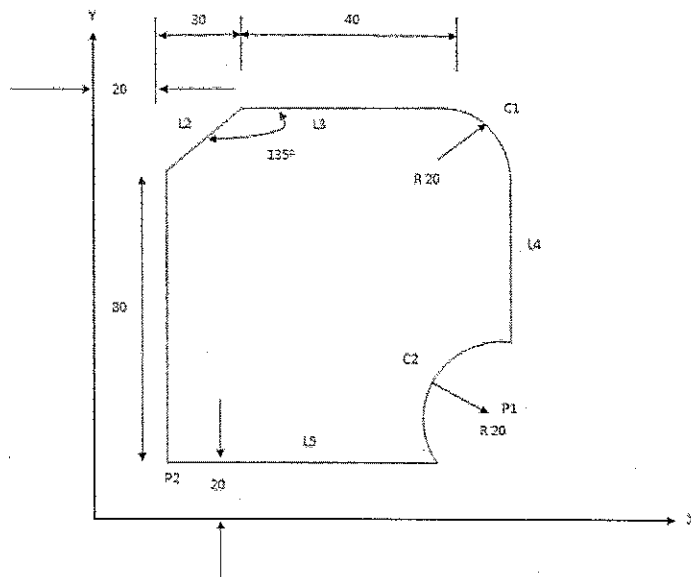


Fig. 2