

**N.B.:**

- (1) Question No.1 is compulsory
- (2) Attempt any four questions out of remaining six questions
- (3) Figures to right indicate full marks
- (4) Assume suitable data if necessary.
- (5) Notations carry usual meaning.

- Q.1 (A) Write short note on concurrent engineering in product design. 06
- (B) Write short note on computer aided process planning (CAPP). 07
- (C) Plot the Bezier curve having endpoints  $P_0(1, 3)$  and  $P_3(7, 2)$ . The other control points are  $P_1(5, 6)$  and  $P_2(6, 0)$ . Plot for values for  $u=0, 0.1, 0.2, \dots, 1$ , if the characteristic polygon is drawn in the sequence  $P_0-P_1-P_2-P_3$ . 07
- Q.2 (A) Write a part program using G and M codes for finishing a forged component as shown in Figure 1. Assume the speed and feed on the turning center as 500 rpm and 0.3 mm/rev respectively. Assume suitable data if necessary. 10

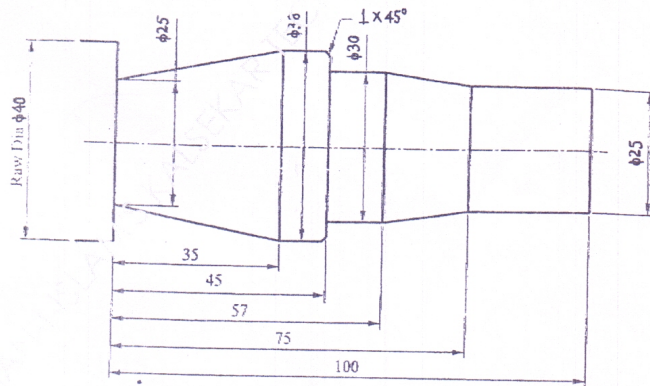


Figure 1

- (B) Consider a triangle ABC having coordinates  $A(5,5)$   $B(8,5)$  and  $C(5,10)$ . Determine the new vertex position if: 10
- (i) The triangle is rotated by  $60^\circ$  anticlockwise about the vertex A.
  - (ii) The triangle is scale by 2 times in X direction and 3 times in Y direction about vertex A.

- Q.3 Write short note on
- A. Adaptive control in manufacturing 8
  - B. Artificial Intelligence in Computer Aided Process Planning (CAPP) 6
  - C. Socio-techno-economic aspects with respect to Computer Integrated Manufacturing (CIM). 6

- Q.4 (A) Write short note on (i) Essentials of Computer Aided Design workstations and its functions (ii) Visual realism 10
- (B) Write a complete APT program (geometric and motion commands) to machine the outline of the geometry as shown in Figure 2. The component is 5 mm thick. The milling tool used is 5 mm in diameter. Consider spindle speed as 1000 rpm and feed as 0.3 mm/rev. Assume suitable data if necessary. 10

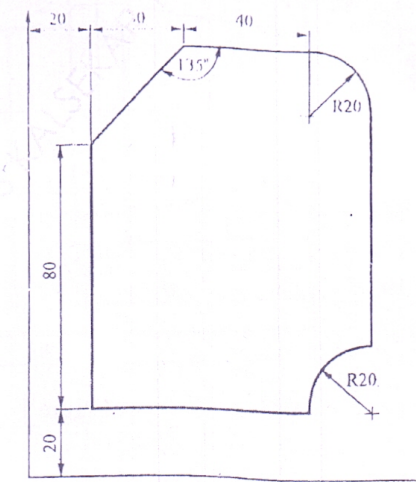


Figure 2

[3]

**QP Code : 8389**

- Q. 5 (A) Write a program in object oriented language for 2D transformation 10  
which include functions for the following operations: (i) rotation @ y-axis (ii) translation in x-direction
- (B) Write short note on (i) Reverse engineering and data capture 10  
techniques (ii) Green Manufacturing
- Q.6 (A) Explain with block diagram Computer Aided Quality Control 10  
(CAQC).
- (B) Write short note on (i) light and shade ray tracing (ii) design for 10  
assembly and disassembly
- Q.7 Write short note on
- (A) Automated material handling and storage systems 06
- (B) Flexible manufacturing systems (FMS) 06
- (C) Feature recognition and design by feature. 08
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