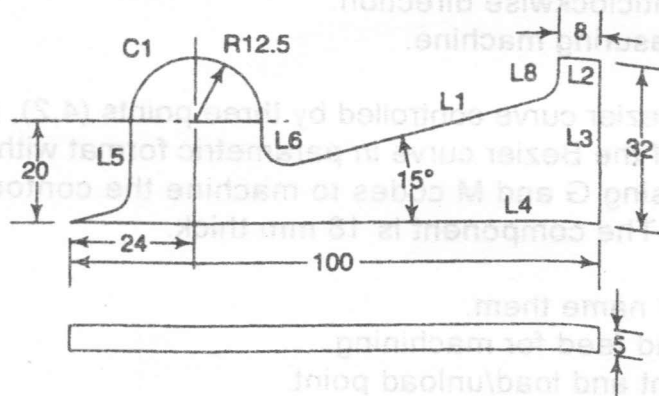


4. (a) Compare wire frame modeling and solid modeling.
 (b) Justify how reflection is a special case of scaling transformation.
 (c) Explain part classification and coding in Group technology in detail.
5. (a) Explain the basic components of AS/RS System. Enlist the types of AS/RS. (Explain any one in detail). What are the criteria to measure the performance of AS/RS Systems ?
 (b) With neat sketch of CIM wheel, explain the salient features of CIM system.
6. (a) Explain following terms :—
 (i) Tool length compensation
 (ii) Dry run.
 (b) Write a complete APT program to machine the outline of the geometry as shown in **figure 2**. Assume suitable data.



7. Write short notes on any **four** :—
 (a) Generative type process planning.
 (b) Socio-techno-economic aspects of CIM.
 (c) Reverse Engineering and data capture technique.
 (d) Virtual prototyping tool.
 (e) 3D Rotation transformation.

