

Full Marks: 100

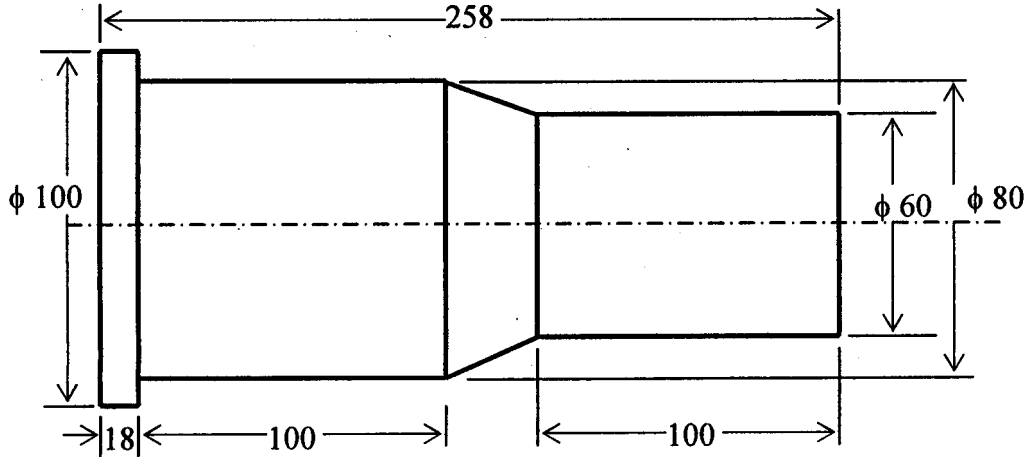
Time: 3 hour

*Answer any FIVE questions.
The questions are of equal value.*

1. Write about the different desirable properties of cutting tool materials.
Compare the advantages and disadvantages of tungsten carbide with those of high speed steel.
Discuss about the different commercial ceramic cutting tool materials.
2. Describe the importance of measuring cutting forces in machining operations.
What are the design requirements of a dynamometer?
Write a short note on piezo-electric dynamometer.
3. Describe the different experimental techniques usually employed for cutting tool wear measurement.
Explain with the help of suitable diagrams the general characteristics of a surface.
What is CLA value of surface roughness?
4. Why are numerically controlled (NC) machine tools are so called?
How is NC different from mechanical control of conventional machine tools?
Write a short note on the CNC machine movements.
5. How NC control systems are classified?
How 'closed loop control' is different from 'open loop control'? Explain with reference to numerical control of tool-work motions in machine tools.
Write a short note on the characteristics of machining centers.

Continued

6. Write a CNC part program with suitable description for turning a bar of 260 mm length and 100 mm diameter for the following configuration:



All dimensions are in mm unless otherwise specified