



17527

14115

3 Hours/100 Marks

Seat No.

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- Instructions:** (1) **All questions are compulsory.**
(2) **Illustrate your answers with neat sketches wherever necessary.**
(3) **Figures to the right indicate full marks.**
(4) **Assume suitable data, if necessary.**
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MARKS

1. A) Answer **any three** of the following : **(3×4=12)**

- i) State the principle of EDM. With a neat sketch explain the process of metal removal.
- ii) Give any four applications of PAM.
- iii) Compare closed loop CNC system with open loop CNC system.
- iv) Define part program. Explain the terms 'preparatory functions' and 'miscellaneous functions' in the context of CNC programming.

B) Answer **any one** of the following : **(1×6=6)**

- i) What are non-traditional machining processes ? Compare traditional and non-traditional machining processes.
- ii) What is lasing action ? Differentiate between EDM and LBM processes.

P.T.O.

**MARKS****(4×4=16)**2. Answer **any four** of the following :

- i) What are the advantages of CNC machines ?
- ii) How are linear and rotary axes identified in CNC machines ?
- iii) Give the classification of broaching machines.
- iv) Compare capstan and turret lathes.
- v) Explain the construction of planomiller.

3. Answer **any two** of the following :**(2×8=16)**

- i) Describe the working principle of AJM. State the advantages, limitations and applications of AJM.
- ii) Prepare a part program to machine the workpiece shown in figure 1 on CNC lathe machine.

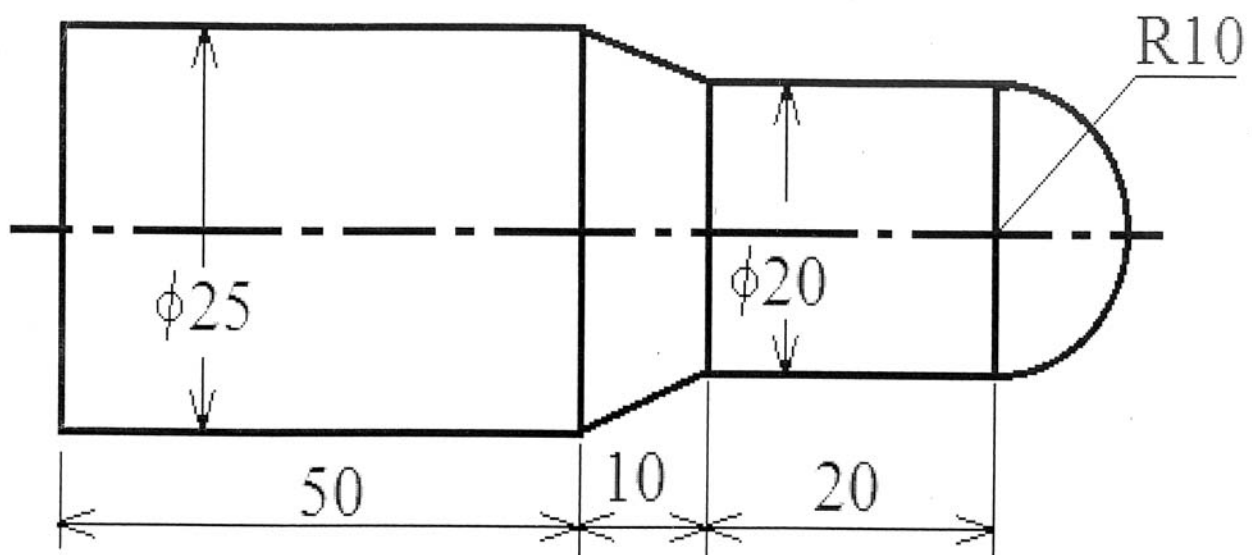


Figure . 1

- iii) Explain the cutting parameters in milling. How is the machining time calculated on a milling machine ?



MARKS

4. A) Answer **any three** of the following : **(3×4=12)**

- i) Differentiate between pull broach and push broach.
- ii) Draw a neat labelled sketch of horizontal broaching machine.
- iii) Give the specifications of horizontal boring machine.
- iv) Explain with sketches 'up milling' and 'down milling'.

B) Answer **any one** of the following : **(1×6=6)**

- i) Write the importance of maintenance. Differentiate between breakdown maintenance and preventive maintenance.
- ii) What are precision grinders ? Explain with a neat sketch the working of centerless grinding machine.

5. Answer **any four** of the following : **(4×4=16)**

- i) Give the maintenance practice for bearings and chains of a machine.
- ii) What is maintenance record ? What are contents of maintenance record ?
- iii) Explain repair complexity.
- iv) How grinding wheel is designated ?
- v) What are safety precautions to be observed while using grinding machines ?
- vi) Differentiate between honing and lapping (at least four points).

**MARKS**6. Answer **any four** of the following :**(4×4=16)**

- i) What is burnishing ? What are its advantages ?
 - ii) Describe the construction and working of plain milling machine with a neat sketch.
 - iii) What are the different methods of manufacturing gears ?
 - iv) Explain gear hobbing process with a neat sketch.
 - v) Why gear shaving process is employed ? Explain the process.
 - vi) What is the function of dividing head ? Sketch the internal mechanism of universal dividing head.
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