Assignment 7
Due on 2023-01-15, 23:59 IST

This assignment is the final assignment for the unit. Please ensure that you submit this assignment as per your instructor's guidelines. The assignment has passed.

1. What is the difference between reducing the load on the machine and reducing the load on the tool? (6 marks)

2. Briefly explain the importance of surface preparation in machining processes. (6 marks)

3. What are the advantages of using high-speed machining processes? (6 marks)

4. Discuss the role of coolant in machining processes. (6 marks)

5. Explain the principles of surface finishing. (6 marks)

6. Define the term 'tool wear'. (6 marks)

7. Explain the concept of tool life in machining. (6 marks)

8. What is the importance of maintaining tool sharpness? (6 marks)

9. Discuss the factors that affect the dimensional accuracy of machined parts. (6 marks)

10. Discuss the role of fixture design in precision machining. (6 marks)

Problem 1:
A workpiece is to be machined using a lathe. The workpiece material is mild steel. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to machine a length of 100 mm.

Problem 2:
A cylindrical workpiece is to be bored with a diameter of 50 mm. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to bore a depth of 20 mm.

Problem 3:
A taper is to be milled with a taper angle of 45°. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to mill a length of 100 mm.

Problem 4:
A workpiece is to be turned on a lathe. The workpiece material is stainless steel. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to turn a diameter of 50 mm.

Problem 5:
A workpiece is to be milled with a milling cutter. The workpiece material is aluminum. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to mill a depth of 20 mm.

Problem 6:
A workpiece is to be bored with a drill. The workpiece material is mild steel. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to bore a diameter of 50 mm.

Problem 7:
A workpiece is to be turned on a lathe. The workpiece material is cast iron. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to turn a diameter of 50 mm.

Problem 8:
A workpiece is to be milled with a milling cutter. The workpiece material is stainless steel. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to mill a depth of 20 mm.

Problem 9:
A workpiece is to be bored with a drill. The workpiece material is aluminum. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to bore a diameter of 50 mm.

Problem 10:
A workpiece is to be turned on a lathe. The workpiece material is cast iron. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to turn a diameter of 50 mm.

Problem 11:
A workpiece is to be milled with a milling cutter. The workpiece material is stainless steel. The required surface finish is 1.6 μm. The cutting speed is 50 m/min, and the feed rate is 0.1 mm/rev. Calculate the time required to mill a depth of 20 mm.