Assignment 3

Due: 2019-06-25, 23:00 BST

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1. During orthogonal cutting, cutting speed is 15 m/min. The depth of cut is 2.5 mm, the feed is 0.16 mm/tooth, the tool nose radius is 0.8 mm, and the rake angle is 5°. Calculate the power consumed in the cutting process.

2. A turning job requires a cutting speed of 30 m/min and a feed of 0.25 mm/tooth. The tool nose radius is 0.6 mm, and the rake angle is 0°. Calculate the cutting force.

3. In a milling operation, the spindle speed is 1000 rpm and the feed rate is 0.3 mm/tooth. The tool nose radius is 0.3 mm, and the rake angle is 5°. Calculate the power consumed in the milling operation.

4. A lathe is used to machine a rotating part. The cutting speed is 20 m/min, the feed rate is 0.15 mm/tooth, the tool nose radius is 0.5 mm, and the rake angle is 3°. Calculate the cutting force and the torque required.

5. A turning job involves machining a workpiece with a diameter of 100 mm and a length of 200 mm. The tool nose radius is 0.5 mm, and the rake angle is 0°. Calculate the power consumed in the turning operation.

6. During orthogonal cutting, the cutting speed is 50 m/min, the depth of cut is 3 mm, the feed is 0.15 mm/tooth, the tool nose radius is 0.6 mm, and the rake angle is 0°. Calculate the cutting force and the power consumed in the cutting process.

7. A lathe is used to machine a rotating part. The spindle speed is 1200 rpm, and the feed rate is 0.2 mm/tooth. The tool nose radius is 0.4 mm, and the rake angle is 2°. Calculate the cutting force and the torque required.

8. A turning job requires a cutting speed of 25 m/min and a feed of 0.2 mm/tooth. The tool nose radius is 0.4 mm, and the rake angle is 0°. Calculate the cutting force and the power consumed in the turning operation.

9. A milling operation involves machining a workpiece with a length of 100 mm and a width of 200 mm. The tool nose radius is 0.3 mm, and the rake angle is 5°. Calculate the power consumed in the milling operation.

10. During orthogonal cutting, the cutting speed is 18 m/min, the depth of cut is 2 mm, and the feed is 0.15 mm/tooth. The tool nose radius is 0.5 mm, and the rake angle is 3°. Calculate the cutting force and the power consumed in the cutting process.

11. A lathe is used to machine a rotating part. The spindle speed is 1500 rpm, and the feed rate is 0.25 mm/tooth. The tool nose radius is 0.6 mm, and the rake angle is 2°. Calculate the cutting force and the torque required.

12. A turning job involves machining a workpiece with a diameter of 150 mm and a length of 300 mm. The tool nose radius is 0.7 mm, and the rake angle is 0°. Calculate the cutting force and the power consumed in the turning operation.

13. A milling operation involves machining a workpiece with a length of 120 mm and a width of 240 mm. The tool nose radius is 0.4 mm, and the rake angle is 5°. Calculate the power consumed in the milling operation.

14. During orthogonal cutting, the cutting speed is 22 m/min, the depth of cut is 3 mm, and the feed is 0.2 mm/tooth. The tool nose radius is 0.5 mm, and the rake angle is 2°. Calculate the cutting force and the power consumed in the cutting process.