Unit 4 - Week 2: Cutting tool geometry and orthogonal cutting process

Assignment 2

Due on 2020-02-12, 23:59 IST.

Assignment 2

1. Tool angles in ASA system are as follows: side rake angle: 10°, back rake angle: 5°, side cutting edge angle: 3°, end cutting edge angle: 15°, and relief angle: 4°. side relief angle: 3°, nose radius: 0.8 mm. The tool symbol is ______.

   Correct Answer:
   - R5-10-3-15-4-0.8
   - R5-10-5-15-4-0.8
   - R5-10-3-15-4-0.8
   - R5-10-5-15-4-0.8

   Score: 0 / 1

2. In ASA system, side rake angle is 10°, back rake angle is 5°, side cutting edge angle is 10° and end cutting edge angle is 20°. Orthogonal cutting force in OX5 (in Newton) is ______.

   Correct Answer:
   - 0.99
   - 0.25
   - 0.27
   - 0.1

   Score: 0 / 1

3. If inclination angle is 7° and normal rake angle is 4°, the orthogonal rake angle is ______.

   Correct Answer:
   - 3°
   - 4.5°
   - 5.0°
   - 5.0°

   Score: 0 / 1

4. If side rake angle is 4°, back rake angle is 5° and side cutting edge angle is 10°, then inclination angle is ______.

   Correct Answer:
   - 1.5°
   - 2°
   - 2.5°
   - 2°

   Score: 0 / 1

5. If back rake angle is 8° and side rake angle is 10°, the maximum rake angle (in degrees, up to two decimal places accuracy) is ______.

   Correct Answer:
   - 0°
   - 0.5°
   - 0.7°
   - 0°

   Score: 0 / 1

6. In an orthogonal cutting, f = 0.1 mm, e = 10°. The cutting ratio (up to two decimal places accuracy) is ______.

   Correct Answer:
   - 0.5
   - 0.5
   - 0.5
   - 0.5

   Score: 0 / 1

7. In an orthogonal cutting, cutting force is 350 N, and thrust force is 250 N. Hake angle is 10°. Effective Coulomb's coefficient is ______.

   Correct Answer:
   - 0.1
   - 1.0
   - 1.1
   - 1.1

   Score: 0 / 1

8. In an orthogonal cutting process, cut chip thickness is 1.5 mm and width of cut is 8 mm. Ultimate shear strength of the material is 290 MPa. The shear angle is 35°. The shear force P in Newton is ______.

   Correct Answer:
   - 500
   - 600
   - 700
   - 800

   Score: 0 / 1

9. For the shear angle of 23° and rake angle of 10°, the shear area in the chip is ______.

   Correct Answer:
   - 2.5
   - 2.5
   - 2.5
   - 2.5

   Score: 0 / 1

10. During an orthogonal machining with a HSS tool, the rake angle was 5° and the undeformed chip-thickness was 0.2. The coefficient of friction between the chip and tool was 0.60. Using Merchant's first solution, the chip thickness (in mm, up to two decimal places accuracy) is ______.

    Correct Answer:
    - 0.03
    - 0.03
    - 0.03
    - 0.03

    Score: 0 / 1

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