

**PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING**

Midterm Examination : Semester II

Academic year : 2007

Date : December 29, 2007

Time : 9.00 - 12.00

Subject : 226-306 Tools Engineering

Room : หัวหิน

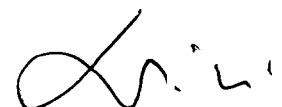
ทฤษฎีในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น
และพักการเรียน 1 ภาคการศึกษา

Instruction :

- Answer all questions in the answer book.
- All notes, books and calculators are not allowed.
- Total score is 100 (45%).

Questions:

1. Why do positive rake angles have greater cutting efficiency from the standpoint of power requirements and cutting forces? (3 marks)
2. What determines the type of chip? Explain. (3 marks)
3. Name the design and machining practices that help to reduce the built-up edge on the BUE chip? (3 marks)
4. Define side-rake angle, side relief angle and back-rake angle. (6 marks)
5. Why may thin-wall tubing or long slender workpieces be more satisfactorily machined with decreased SCEA? (3 marks)
6. Why are negative rake angles necessary when taking interrupted cuts with carbide tools? (2 marks)
7. What is the major advantage of negative-rake inserts used in throwaway insert-type tools? (3 marks)



8. How is the chip control accomplished? Explain. (3 marks)
9. Why is tool geometry for boring much more critical than for turning? (3 marks)
10. What are the advantages of a lead angle of boring tool? (3 marks)
11. In the selection of milling cutter, why should the cutter diameter be kept as small as possible? (3 marks)
12. Generally speaking, why should milling cutters with straight flutes be avoided? (3 marks)
13. Why does the action of a helical flute on a milling cutter provide smooth and continuous cutting? (3 marks)
14. Why may the relief on end teeth of two-flute end mills be more than that on multiple-tooth end mills? (3 marks)
15. Why is chip formation produced in a drilling operation extremely complex? (3 marks)
16. What is the advantage of high-helix drills? Low-helix drills? (3 marks)
17. What is the effective rake angle of a drill? and how is the effective rake angle changed on a standard drill when the drill geometry is fixed by the manufacturer? (3 marks)
18. Describe the methods of chip control in drilling operations. (3 marks)
19. What should be done to correct for drill failure when the outer corners of the drill have been wiped off during the drilling operation? (3 marks)
20. Why is reaming speed slower than drilling speed? and why is reaming feed higher than drilling feed? (3 marks)
21. What is necessary to establish complete location of a workpiece whose configuration is formed by flat planes? (3 marks)

Miller

22. What is a fool proofing pin? Give an example. (3 marks)
23. What is the disadvantage of smaller included V angles? (3 marks)
24. How is unevenness compensated for when locating against an irregular surface with more than three locating points? (3 marks)
25. What are the differences between pins, buttons and plates? (3 marks)

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25. What are the differences between pins, buttons, and plugs? (3 marks)
26. How are inaccuracies caused by chips interfering with locating points controlled? (3 marks)
27. What are the basic rules for applying clamping forces? (3 marks)
28. What are the essential parts of a strap clamp? (3 marks)
29. What is the difference between a drill jig and a fixture? (3 marks)
30. What is the advantage of tumble jigs? (2 marks)
31. What is the ANSI classification of drill bushings, and how is each classification used? (3 marks)
32. How should jig feet be placed in relation to the drill bushings? (3 marks)
33. What methods are used when two or more holes are so close together that it is impossible to have an individual standard bushing for each hole in the workpiece? (3 marks)

Pichit Pitsuvan
December, 2007

