PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Midterm Examination : Semester II **Academic year : 2008**
Date : December 27, 2008. **Time : 9.00-12.00**
Subject : 226-306 Tools Engineering **Room : EE 213**

ทุจริตในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น
และพักการเรียน 1 ภาคการศึกษา

Instruction :

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

Questions:

1. Name the design and machining practices that help to reduce the built-up edge on the BUE chip? (3 marks)

2. Sketch a single point cutting tool and define the angles. (6 marks)

3. What are the advantages and disadvantages of increasing the SCEA ? (3 marks)

4. Why are negative rake angles necessary when taking interrupted cuts with carbide tools? (3 marks)

5. What is the major advantage of negative-rake inserts used in throwaway insert-type tools? (3 marks)

6. What is the purpose of the carbide seat provided to support the throwaway insert? (3 marks)

7. What provisions are made for adjustment of mechanical chip breakers to meet the demands of different cutting conditions? (3 marks)

8. What are the functions of the lead angle of a boring tool? (3 marks)

9. What is a staggered-tooth milling cutter? (3 marks)

10. Why does the action of a helical flute on a milling cutter provide smooth and continuous cutting? (3 marks)

11. When is the Right-hand-cut left-hand-helix end mills used? Why? (3 marks)

12. Which teeth on milling cutters are often sharpened with radial taper? Why? (3 marks)

13. When selecting a milling cutter, why is it important to keep the cutter diameter as small as possible? (3 marks)

14. Why may the relief on side cutting edge be less than that on peripheral cutting edge of a milling cutter? (3 marks)

15. What is the advantage of eccentric relief on small milling cutters? (3 marks)

16. Why is it preferable to use face-milling cutter with a chamfer sufficiently wide for cutting to be confine to the cutting edge along the chamfer when face-milling a plain surface? (3 marks)

17. How is it possible for a drill to unwind during a drilling operation? How is this tendency reduced? (3 marks)

18. What is the advantage of high-helix drills? Low-helix drills? (4 marks)

19. How is the effective rake angle changed on a standard drill when the drill geometry is fixed by the manufacturer? (3 marks)

20. 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)

21. Why is reaming speed slower than drilling speed? (3 marks)

22. What is the major difference between an expansion machine reamer and an expansion hand reamer? (3 marks)

23. What are the major advantages of a spiral-fluted hand tap? (3 marks)

24. What is one of the shortcomings of V location? (3 marks)

25. How is unevenness compensated for when locating against an irregular surface with more than three locating points? (3 marks)

26. What are diamond pins, and how are they used? (3 marks)

27. What are the four essential requirements of clamps and clamping devices? (3 marks)

28. What is a spherical washer, and when is it used? (3 marks)

29. Explain the principle of a simple toggle clamp. (3 marks)

30. What is the difference between template jig and plate jig? (3 marks)

31. How should jig feet be placed in relation to the drill bushings? (3 marks)

32. 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 pitsuwan
December, 2008