

**PRINCE OF SONGKLA UNIVERSITY  
FACULTY OF ENGINEERING**

**Midterm Examination : Semester II  
Date : December 20, 2006  
Subject : 226-306 Tools Engineering**

**Academic year : 2006  
Time : 13.30-16.30  
Room : R 300**

**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. How does the process of chip formation contribute to vibration, or chatter, of the cutting tool? (3 marks)
2. Name and describe the three basic types of chips? (3 marks)
3. Name the design and machining practices that help to reduce the built-up edge on the BUE chip? (3 marks)
4. Sketch a single point cutting tool and define the angles. (6 marks)
5. What are the advantages and disadvantages of increasing the SCEA ? (3 marks)
6. What is the difference between clearance angles and relief angles? (2 marks)
7. What is the purpose of the carbide seat provided to support the throwaway insert? (3 marks)

8. What are the advantages and the disadvantages of the angular ground-in chip breaker? (3 marks)
9. Why is tool geometry for boring much more critical than for turning? (3 marks)
10. What are the functions of the lead angle of a boring tool? (3 marks)
11. What is an interlocking side milling cutter? (3 marks)
12. What is a hollow end mill? (3 marks)
13. Why does the action of a helical flute on a milling cutter provide smooth and continuous cutting? (3 marks)
14. When is the Right-hand-cut left-hand-helix end mills used? Why? (3 marks)
15. Which teeth on milling cutters are often sharpened with radial taper? Why? (3 marks)
16. Why is chip formation produced in a drilling operation extremely complex? (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 are the advantages of core drills? (3 marks)
19. What is the different between step drill and subland drill? (3 marks)
20. Why has trepanning been a popular drilling method? (3 marks)
21. What is the purpose of a split-point (crankshaft point) drill? (3 marks)

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22. What are possible causes of oversize holes when drilling? (3 marks)
23. What is the difference between a rose chucking reamer and a fluted chucking reamer? (3 marks)
24. What is the major difference between an expansion machine reamer and an expansion hand reamer? (2 marks)
25. What is the major difference between fixed-limit gages and indicating gages? (3 marks)
26. What are go-not-go gages? (3 marks)
27. What is a sine bar? How is it used? (3 marks)
28. What is the difference between master gage blocks, inspection gage blocks, and working gage blocks? How are they used? (3 marks)
29. Select gage blocks to built up dimension 2.5681-inch. (3 marks)
30. What are optical flats? How are they used? (3 marks)
31. How are unilateral tolerances applied to (a) plug gages and (b) ring gages? (3 marks)
32. Explain the principle of pneumatic gaging. (3 marks)
33. What are the major advantages of pneumatic gages? (3 marks)

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Pichit Pitsuwan  
December,2006.

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