

**PRINCE OF SONGKLA UNIVERSITY**  
**FACULTY OF ENGINEERING**

Midterm Examination: Semester 1

Academic Year: 2008

Date: July 28, 2008.

Time: 09:00 - 12:00

Subject: 225-467 Quality Improvement

Room: R300

ทฤษฎีในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้นและ  
พักการเรียน 1 ภาคการศึกษา

Instructions:

1. There are 60 points (30%).
2. Books and notes are allowed.
3. A calculator and a dictionary are allowed.
4. Borrowing things from other students is prohibited.

Question No.	Full Score	Score
1	10	
2	8	
3	8	
4	10	
5	10	
6	14	
<b>Total</b>	<b>60</b>	

Dr. Runchana Sinthavalai  
Instructor



1. (10 Points) Choose one success factor in the "Bank" operations and explain how Juran Trilogy diagram (Fig.1) can be applied for.

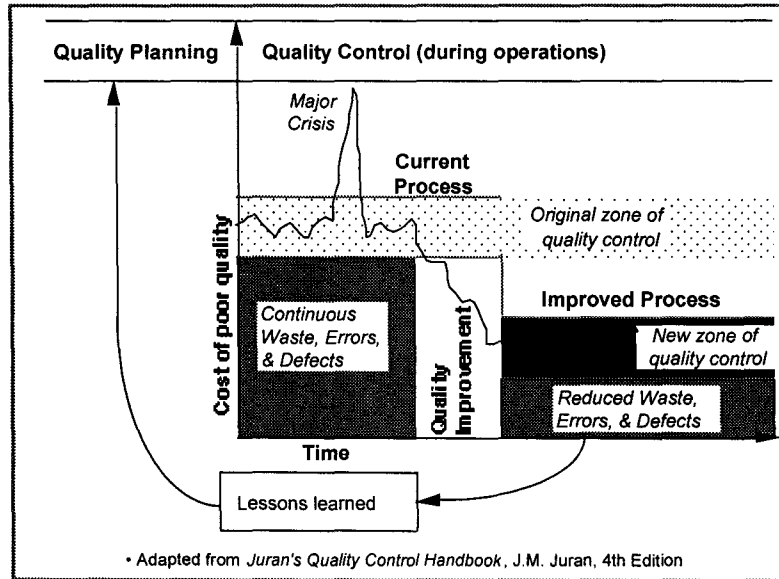


Fig.1 Juran Trilogy Diagram

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2. (8 Points) What are the disadvantages to using **Top-down and Bottom-up approaches** for project identification?

Identify two disadvantages for each approach

Top-Down Approach	Bottom-Up Approach
1.	1.
2.	2.

3. (8 Points) Identify two critical success factors in **Quality Costing** and explain how those are important?

Critical Success Factors	Explain
Factor1:	
Factor2:	

4. (10 Points) Identify and explain three main types of **Benchmarking**. What difficulties are typically encountered each type? In what circumstances would each type be most appropriate?

Type	Difficulties	Circumstances best suited
Type:..... Explain:		
Type:..... Explain:		
Type:..... Explain:		

5. **(10 Points)** The viscosity of a liquid is checked every half hour during a production. Data are 39, 42, 38, 37, 41, 40, 36, 35, 37, 36, 39, 34, 38, 32, 37, 35, 34, 33, 32, and 38. Determine the process capability ratio ( $C_p$ ) and  $C_{pk}$  using specifications of  $35 \pm 10$ . (ทศนิยม 2 ตำแหน่ง)
6. **(14 Points)** A major record-of-the-month collected data on the reasons for returned shipments of Pizza Delivery. Results are: wrong address, 115; wrong order, 83; late delivery, 176; order canceled, 45; and other, 92.
- 6.1 Construct a **Pareto Diagram** (ทศนิยม 2 ตำแหน่ง)
- 6.2 Design the **Check sheet** for a month record of this issue
- 6.3 Applying the **Cause-and-Effect diagram** to identify the root causes for the first ranked reason for returned shipment.