一、Single choice question （10 items，2points each，total　20points）

提示：在每小题列出的四个备选项中只有一个是符合题目要求的，请将其代码填写在括号中。错选、多选或未选均无分。

1．What is heart of the architecture evaluation （　　）

　　(A) ATAM　　　　　　　　　　　(B) CBAM
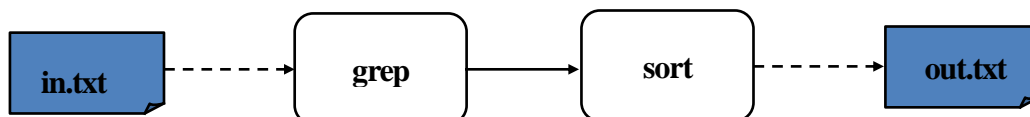
　　(C) Model analysis　　　　　　　　(D) Utility tree

2．How much phase does the ATAM evaluation have?　（　　）

　　(A) 3　　　　　　　　　　　　　　(B) 4

　　(C) 5　　　　　　　　　　　　　　(D) 6

3．Which pattern does the context "All complex systems experience the need to develop and

　　evolve portions of the system independently" belong to （　　）

　　(A) Layer pattern　　　　　　　　(B) Broker pattern

　　(C) MVC pattern　　　　　　　　　(D) Map-reduce pattern

4．What architecture pattern is below graph?　（　　）

　　(A) MVC pattern　　　　　　　(B) Pipe-and-Filter patter

　　(C) Layer pattern　　　　　　　(D) Map-Reduce pattern

5．What is mean of "REDUCE" in the MAP-REDUCE pattern （　　）

　　(A) Reduce process　　　　(B) Reduce output

　　(C) Reduce input　　　　　(D) The output set is much smaller than the input set

6．What below tactics do belong to the testability （　　　）

　　(A) Maintain audit trail　　　(B) Detect Intrusion

　　(C) Lock computer　　　　　(D) Limit structural complexity

7．Which pattern does used to transform stream of discrete data items from input to output（   ）

(A) Pipe-and-Filter pattern

(B) Peer-to-Peer pattern

(C) Layered pattern

(D) SOA pattern

8．When an examination score was inputted into the student management system, the system found the score is minus and tip the inputter. What tactic is this?（   ）

(A) Sanity checking

(B) Reintroduction

(C) Active redundancy

(D) Increase competence set

9．Which quality attribute does the "reduce overhead" tactic support（   ）

(A) Availability

(B) Modifiability

(C) Performance

(D) Security

10．Which quality attribute does the "increase semantic coherence" tactic support（   ）

(A) Availability

(B) Modifiability

(C) Performance

(D) Security

二、Multiple choice question（10 items，2points each，total   20points）

提示：在每小题列出的四个备选项中只有一个是符合题目要求的，请将其代码填写在括号中。错选、多选或未选均无分。

1．Which forms may the architecture evaluation be taken（   ）

(A) By manager in the requirement analysis

(B) By the designer within the design process

(C) By tester in the test process

(D) By peers within the design process

(E) Analysis by outsiders once the architecture has been designed

2．Which responsibilities does the evaluation leader in ATAM evaluation take（   ）

(A) Set up the evaluation

(B) Release final report

(C) Run evaluation

(D) Facilitates onsite analysis

(E) Facilitates evaluation of scenarios against architecture

3．Who are the architecture stakeholders （　　））

(A) Developer (B) User

(C) Integrator (D) Maintainer (E) Performance engineer

4．What does the initial hypothesis of the generate-and-test design method include （　　　）

(A) Existing systems (B) Known architecture patterns

(C) Design checklists (D) A domain decomposition

(E) Frameworks available to the project

5．Which pattern does a typical web-based system might include （　）

(A) Layer pattern (B) Broker pattern

(C) MVC pattern (D) Client-server pattern

(E) Pipe-and-Filter pattern

6．Which quality attribute does the layer pattern support （　）

(A) Portability (B) Modifiability

(C) Performance (D) Security (E) Usability

7．Which element does the broker pattern might include （　　　）

(A) Client (B) Server

(C) Client-side proxy (D) Broker

(E) Server-side proxy

8．What is the relationship between tactics and pattern （　）

(A) Patterns comprise tactics (B) Using tactics to augment patterns

(C) Tactics hinder pattern (D) Most patterns consist of several different tactics

(E) Tactics are atoms and patterns are molecules

9．Which tactics does layer pattern contain （　）

(A) Increase semantic coherence (B) Abstract common services

（C）Encapsulate

（D）Restrict communication paths

（E）Intermediary

10．Which below quality attributes does relative to the modifiability?（　　）

（A）Variability

（B）Portability

（C）Scalability

（D）Mobility

（E）Monitorability

三、terms to explain（5 items，2 points each，total　10points）

1．ATAM (Architecture tradeoff analysis method) (构架权衡分析方法)

ATAM reveals how well architecture satisfies particular quality goals, and it provides insight into how quality goals interact——that is, how they trade off

2．Sensitivity point (敏感点)

Architectural decisions that have a marked effect on one quality attribute

3. Product lines (产品线)

Product lines is a set of software-intensive systems sharing a common, managed set of features that satisfy the specific needs of a particular market segment or mission and that are developed from a common set of core assets in a prescribed way

4. Architecture pattern (构架模式)

Architectural pattern is a package of design decisions that is found repeatedly in practice; it has know properties that permit reuse and describes a class of architectures.

5. Integrity (完整性)

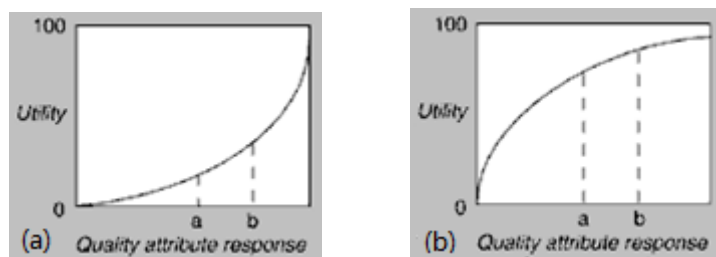Integrity is the property that data or services are not subject to unauthorized manipulation

四、Short Answer Questions（3 items，10points each，total　30points）

1. Simply describe the evaluation process of ATAM.

1) Present the ATAM (1)

2) Present Business Drivers (1)

3) Present Architecture (1)

4) Identify Architectural Approaches (1)

5) Generate Quality Attribute Utility Tree (1)

6) Analyze Architectural Approaches (1)

7) Brainstorm and Prioritize Scenarios (1)

8) Analyze Architectural Approaches (1)

9) Present Results (1)

2. There are two quality attribute response curves (a) and (b). Except to the slope of the curve, their other properties are same. You prefer to invest which curve more money for more utility, why?

Invest curve a more money (5). Because the curve a has fast slope, It means that improving the same quality attribute will achieve the more utilities, namely its value for cost (VFC) is high in economic account. (5)

3. About broker pattern, it both supports and hinder (block) the availability and performance quality attributes. How do you understand the contradiction phenomenon?

This is because we understand the problem standing on the different points of view (2). The broker pattern supports performance, because it can parallel process and load balance (2). However it hinders the performance, because broker is a performance bottleneck (2). The broker pattern supports availability, because it has multiple server and failover (2). However it hinders the availability, because broker is a single point of failure (2).

五、Analytical questions（1items，20points each，total　20points）

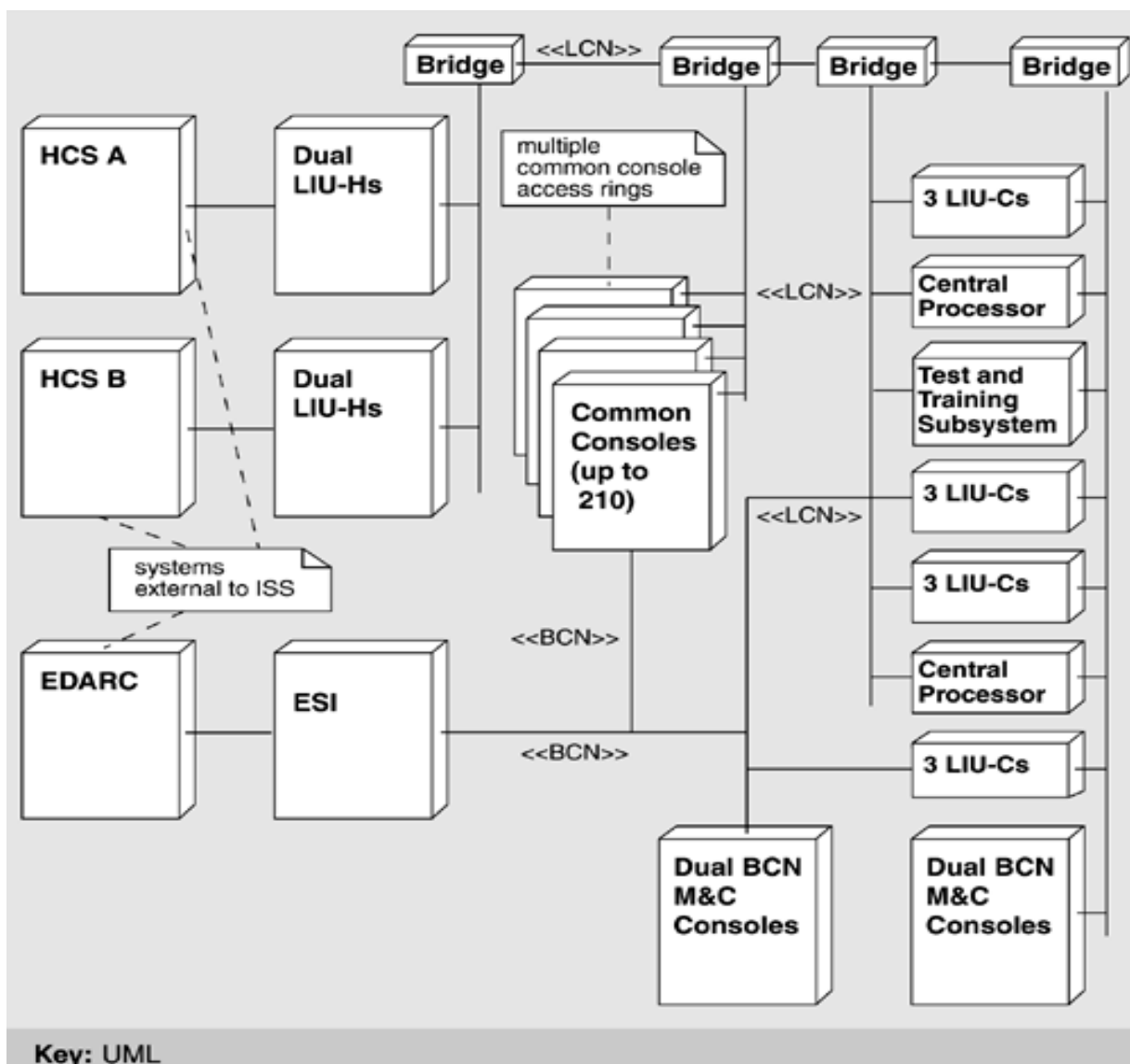1．Analyze the below structure, and answer question.

1) Which quality does the structure support? (5)

2) How does the structure support its quality attribute

The structure support availability quality attributes (5)

It takes the redundant and monitor tactics to support the availability (5)

The HCS A and HCS B run in parallel, this is hot redundant (5). There are two sets network LCN and BCN, they are warm redundant (2). The M&C console monitors the system state; this is monitor tactic (3)

Key: UML

Annotation:

HCS:　　Host Computer System

LIU:　　Local Interface Unit

LCN:　　Local Communications Network

BCN:　　Backup Communications Network

EDARC:　Enhanced Direct Access Radar Channel

M&C:　　Monitor-and-Control