Chapter 1

1：Software deteriorates rather than wears out because

A) Software suffers from exposure to hostile environments

B) Defects are more likely to arise after software has been used often

C) Multiple change requests introduce errors in component interactions

D) Software spare parts become harder to order

A B C D

----------: C

2：Today the increased power of the personal computer has brought about an abandonment of the practice of team development of software.

A) True

B) False

A B

----------: B

3：The nature of software applications can be characterized by their information

A) complexity

B) content

C) determinacy

D) both b and c

A B C D

----------: D

4：Which question no longer concerns the modern software engineer?

A) Why does computer hardware cost so much?

B) Why does software take a long time to finish?

C) Why does it cost so much to develop a piece of software?

D) Why can't software errors be removed from products prior to delivery?

A B C D

----------: A

5：Most software continues to be custom built because

A) Component reuse is common in the software world.

B) Reusable components are too expensive to use.

C) Software is easier to build without using someone else\'s components.

D) Off-the-shelf software components are available in many application domains.

A B C D

----------: D

6：Modern software applications are so complex that it is hard to develop mutually exclusive category names.

A) True

B) False

A B

----------: A

7：The functionality of most computer systems does not need to be enhanced the lifetime of the system.

A) True

B) False

A B

----------: B

8：Most software development projects are initiated to try to meet some business need.

A) True

B) False

A B

----------: A

9：Change cannot be easily accommodated in most software systems, unless the system was designed with change in mind.

A) True

B) False

A B

----------: A

10：In general software only succeeds if its behavior is consistent with the objectives of its designers.

A) True

B) False

A B

----------: B

11：The so called "new economy" that gripped commerce and finance during the 1990s died and no longer influences decisions made by businesses and software engineers.

A) True

B) False

A B

----------: B

12：Software is a product and can be manufactured using the same technologies used for other engineering artifacts.

A) True

B) False

A B

----------: B

二、主观题

13：

How does software differ from the artifacts produced by other engineering disciplines?

参考答案: Software is both a product and a vehicle for delivering a product.

As a product, software is an information transformer.

As a vehicle for delivering a product, software serves as a basis for computer control, communication, and creation of other programs.

14：How do software characteristics differ from hardware characteristics?

参考答案:

Software is developed, not manufactured.

Software does not wear out, but it can deteriorate when changes are made.

Most software is custom built, not assembled out of components.

15：What is the difference between software that is determinate and software that is indeterminate?

参考答案: Software is determinate is the order and timing of its inputs, processing, and outputs is predictable and it is indeterminate if the order and timing of its input, processing, and outputs is not predictable in advance.

16：Explain what is wrong with the notion that computer software does not need to evolve over time.

参考答案: Computer software must be revised as errors are discovered and corrected. Software must be updated to accommodate changes in the computing environment. Many times a customer will request changes to add new functions to an existing product or to accommodate changes in the business environment. Sometimes an older system will need to be reengineered to provide benefits to the user in a modern context. The bottom line is that software that does not evolve will eventually become unusable.

① 程序纠错

② 更新软件适应新的计算环境

③ 新的业务需求

④ 再施工使之在现代应用中发挥作用

Chapter 2

1：Software processes can be constructed out of pre-existing software patterns to best meet the needs of a software project.

A) True

B) False

A B

----------: A

2：It is generally accepted that one cannot have weak software processes and create high quality end products.

A) True

B) False

A B

----------: A

3：The best software process model is one that has been created by the people who will actually be doing the work.

A) True

B) False

A B

----------: A

4：Which of these are the 5 generic software engineering framework activities?

A) communication, planning, modeling, construction, deployment

B) communication, risk management, measurement, production, reviewing

C) analysis, designing, programming, debugging, maintenance

D) analysis, planning, designing, programming, testing

A B C D

----------: A

5：Which of the items listed below is not one of the software engineering layers?

A) Process

B) Manufacturing

C) Methods

D) Tools

A B C D

----------: B

6：Which of these are objectives of Team Software Process?

A) Allow better time management by highly trained professionals

B) Accelerate software process improvement

C) Build self-directed software teams

D) Show managers how to reduce costs and sustain quality

E) both b and c

A B C D E

----------: E

7：Which of these is not a characteristic of Personal Software Process?

A) Emphasizes personal measurement of work product

B) Practitioner requires careful supervision by the project manager
C) Individual practitioner is responsible for estimating and scheduling
D) Practitioner is empowered to control quality of software work products
A B C D

----------: B

8：Software engineering umbrella activities are only applied during the initial phases of software development projects.
A) True
B) False
A B

----------: B

9：Which of these are standards for assessing software processes?
A) SEI
B) SPICE
C) ISO 19002
D) ISO 9001
E) both b and d
A B C D E

----------: E

10：Process technology tools allow software organizations to compress schedules by skipping unimportant activities.
A) True
B) False
A B

----------: B

11：Process models are described as agile because they
A) eliminate the need for cumbersome documentation
B) emphasize maneuverability and adaptability
C) do not waste development time on planning activities
D) make extensive use of prototype creation
A B C D

----------: B

12：Which of these terms are level names in the Capability Maturity Model?
A) Performed
B) Repeated
C) Reused
D) Optimized
E) both a and d
A B C D E

----------: E

二、主观题

13：List three areas in which process models may differ from one another.

参考答案: Overall flow and level of interdependencies among tasks

①. （框架活动）工作任务定义

②. 工作产品定义、需求

③. 应用质量保证活动的风格

④. 项目跟踪控制的风格

⑤. 利益相关者的参与度

⑥. 过程描述的细节度

⑦. 项目团队自主度

Degree to which team organization and roles are prescribed

14：Describe the “plan-do-check-act” cycle from in the ISO 9001:2000 standard as it is applied to assessing the quality management elements of a software project.

参考答案: Plan – 为了高质量的产品建立过程目标、活动、任务

Do –实现软件框架活动和普适性活动

Check –监督并测量过程，

Act –启动软件过程改进活动，持续改进过程

15：Why has the Personal Software Process has not been widely adopted by industry?

参考答案: PSP is intellectually challenging and demands a level of commitment (e.g. lengthy and costly training required) that is not always possible to obtain. In addition the required level of measurement is culturally hard for many software practitioners.

①. 对能力的极大挑战

②. 需要一定程度的承诺

③. 培训成本高时间长

④. 文化上有难度。

16：What are the names of the six levels of the SEI Capability Maturity Model Integration (CMMI)? In your own words, briefly describe each.

参考答案:

0 不完整级 过程域的目标未实现

1 已执行级 所有目标完成

2 已管理级 基本的项目管理

3 已定义级 过程标准化

4 量化管理级 定量管理

5 最优化级 持续的过程改进

Chapter 3

一、客观题

1：The spiral model of software development

A) Ends with the delivery of the software product

B) Is more chaotic than the incremental model

C) Includes project risks evaluation during each iteration

D) All of the above

A B C D

----------: C

2： Evolutionary software process models

A) Are iterative in nature

B) Can easily accommodate product requirements changes

C) Do not generally produce throwaway systems

D) All of the above

A B C D

----------: D

3：The concurrent development model is

A) Another name for the rapid application development model.

B) Often used for the development of client/server applications.

C) Only used for development of parallel or distributed systems.

D) Used whenever a large number of change requests are anticipated.

A B C D

----------: B

4：Which of these is not one of the phase names defined by the Unified Process model for software development?

A) Inception phase

B) Elaboration phase

C) Construction phase

D) Validation phase

A B C D

----------: D

5： The linear sequential model of software development is also known as the

A) Classical life cycle model

B) Fountain model

C) Spiral model

D) Waterfall model

E) both a and d

A B C D E

----------: E

6：The linear sequential model of software development is

A) A reasonable approach when requirements are well defined.
B) A good approach when a working program is required quickly.
C) The best approach to use for projects with large development teams.
D) An old fashioned model that cannot be used in a modern context.
A B C D

----------: A

7：The form*al* methods model of software development makes use of mathematical methods to
A) Define the specification for computer-based systems
B) Develop defect free computer-based systems
C) Verify the correctness of computer-based systems
D) All of the above
A B C D

----------: D

8： In the Unified Process model requirements are determined iteratively and may span more than one phase of the process.
A) True
B) False
A B

----------: A

9：The incremental model of software development is
A) A reasonable approach when requirements are well defined.
B) A good approach when a working core product is required quickly.
C) The best approach to use for projects with large development teams.
D) A revolutionary model that is not used for commercial products.
A B C D

----------: B

10： The rapid application development model is
A) Another name for component-based development.
B) A useful approach when a customer cannot define requirements clearly.
C) A high speed adaptation of the linear sequential model.
D) All of the above.
A B C D

----------: C

11：The prototyping model of software development is
A) A reasonable approach when requirements are well defined.
B) A useful approach when a customer cannot define requirements clearly.
C) The best approach to use for projects with large development teams.
D) A risky model that rarely produces a meaningful product.
A B C D

----------: B

12：The component-based development model is

A) Only appropriate for computer hardware design.

B) Not able to support the development of reusable components.

C) Works best when object technologies are available for support.

D) Not cost effective by known quantifiable software metrics.

A B C D

----------: C

二、主观题

13：Why are incremental process models considered by many to be the best approach to software development in a modern context?

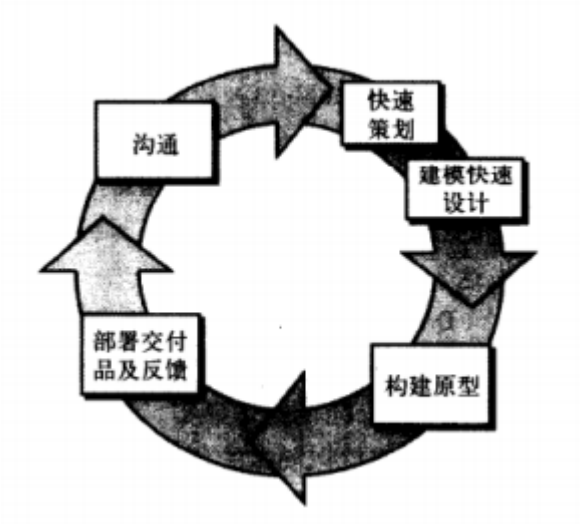
参考答案:

①. 在时间有限的情况下特别有用

②. 便于修改，满足用户需求

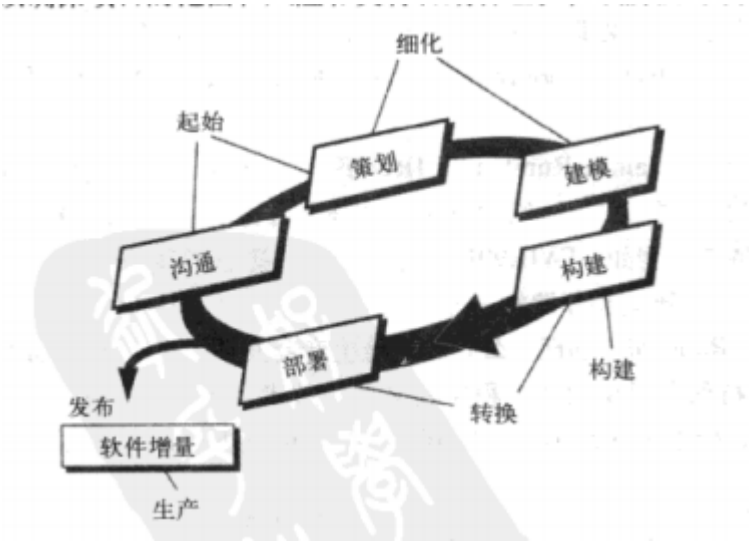
③. 清晰展现复杂系统的逐步构成

14：Describe the phases of the prototyping model for software development?



参考答案: Requirements are gathered by having the customer and developer meet and identify whatever objectives and requirements they can. Quick design follows, focusing on representation of the software that will be visible to the customer. A prototype is constructed by the developer and evaluated by the customer and used to refine the requirements. Iteration occurs and the prototype is tuned to satisfy the customer\'s needs.

15：Describe the 5 phases of the Unified Process model for software engineering?



参考答案: Inception phase (用户沟通、策划、用例)
Elaboration phase (策划、分析、建模)
Construction phase (构建，编码、测试)
Transition phase (构建后期、部署、交给用户测试)
Production (部署、监控软件使用)
16：Describe the role of risk analysis in evolutionary process models like the spiral model.

参考答案: During each iteration through the process steps, both the technical and management risks are assessed to see if it is still possible to complete the project which its required functionality with acceptable time and cost constraints.
17：What are the primary advantages of the component-based process model for software engineering?

参考答案: Component-based process models promote software reuse and reusability and can result in: 70% reduction in development cycle times, 84% reduction in project costs, and 70% increase in productivity.

Chapter 4
一、客观题
1：Which of the following traits need to exist among the members of an agile software team?
A) Competence
B) Decision-making ability
C) Mutual trust and respect
D) All of the above
A B C D

----------: B
2：All agile process models conform to a greater or lesser degree to the principles stated in the

"Manifesto for Agile Software Development".

A) True

B) False

A B

----------: A

3：What are the four framework activities found in the Extreme Programming (XP) process model?

A) analysis, design, coding, testing

B) planning, analysis, design, coding

C) planning, analysis, coding, testing

D) planning, design, coding, testing

A B C D

----------: D

4：In Feature Driven Development (FDD) a "feature" is a client-valued function that can be delivered in two months or less.

A) True

B) False

A B

----------: B

5： Which is not one of the key questions that is answered by each team member at each daily Scrum meeting?

A) What did you do since the last meeting?

B) What obstacles are you encountering?

C) What is the cause of the problems you are encountering?

D) What do you plan to accomplish at the next team meeting?

A B C D

----------: C

6： Agile Modeling (AM) provides guidance to practitioner during which of these software tasks?

A) Analysis

B) Design

C) Coding

D) Testing

E) both a and b

A B C D E

----------: E

7：It is not possible to build software that meets the customers\' needs today and exhibits the quality characteristics that will enable it to be extended tomorrow.

A) True

B) False

A B

----------: B

8：Which of the following is not necessary to apply agility to a software process?

A) Eliminate the use of project planning and testing

B) Only essential work products are produced

C) Process allows team to streamline tasks

D) Uses incremental product delivery strategy

A B C D

----------: A

9：When do you conduct reflection workshops in the Crystal family of agile process models?

A) Before project begins

B) During development activities

C) After increment is delivered

D) All of the above

A B C D

----------: D

10： In agile software processes the highest priority is to satisfy the customer through early and continuous delivery of valuable software.

A) True

B) False

A B

----------: A

11：Agility is nothing more than the ability of a project team to respond rapidly to change.

A) True

B) False

A B

----------: A

12：What are the three framework activities for the Adaptive Software Development (ASD) process model?

A) analysis, design, coding

B) feasibility study, functional model iteration, implementation

C) requirements gathering, adaptive cycle planning, iterative development

D) speculation, collaboration, learning

A B C D

----------: D

13：How do you create agile processes to manage unpredictability?

A) Requirements gathering must be conducted very carefully

B) Risk analysis must be conducted before planning takes place
C) Software increments must be delivered in short time periods
D) Software processes must adapt to changes incrementally
E) both c and d
A B C D E

----------: E
14：The Dynamic Systems Development Method (DSDM) suggests a philosophy that is based on the Pareto principle (80% of the application can be delivered in 20% of the time required to build the complete application).
A) True
B) False
A B

----------: A
二、主观题
15：Describe the three key assumptions regarding software projects that every agile software process must address.

参考答案: • It is difficult to predict in advance which software requirements and customer priorities will change and which will not.
• For many types of software design and construction must be interleaved, it is difficult to predict how much design is needed before construction can be used to prove the design.
• Analysis, design, construction, and testing are not always predictable processes and this makes planning difficult.
16：Describe the role of customers and end-users on an agile process team?

参考答案: Customers and end-users participate as full collaborators on agile process teams. They are the source of information used to create use cases and provided needed information on the business value of proposed software feature and functionality. They also provide much needed feedback on operational prototypes during incremental delivery of software increments.
17：List the key issues stressed by an agile philosophy of software engineering.

参考答案: • The importance of self-organizing teams
• Communication and collaboration between team members and customers
• Recognition that change represents opportunity
• Emphasis on rapid delivery of software that satisfies the customer
18：What are the tradeoffs (values) proposed by the “Manifesto for Agile Software Development”?

参考答案: Individuals and interactions valued over processes and tools
Working software valued over comprehensive documentation
Customer collaboration valued over contract negotiation
Responding to change valued over following a plan

Chapter 5
一、客观题
1： Which of the following is not one of the principles of good coding?
A) Create unit tests before you begin coding
B) Create a visual layout that aids understanding
C) Keep variable names short so that code is compact
D) Write self-documenting code, not program documentation
A B C D

----------: C
2：Which of the following are valid reasons for collecting customer feedback concerning delivered software?
A) Allows developers to make changes to the delivered increment
B) Delivery schedule can be revised to reflect changes
C) Developers can identify changes to incorporate into next increment
D) All of the above

A B C D

----------: D
3： The agile view of iterative customer communication and collaboration is applicable to all software engineering practice.
A) True
B) False
A B

----------: A
4：Which of the following is not one of Hooker's core principles of software engineering practice?
A) All design should be as simple as possible, but no simpler
B) A software system exists only to provide value to its users.
C) Pareto principle (20% of any product requires 80% of the effort)
D) Remember that you produce others will consume
A B C D

----------: C
5：Which of the following activities is not one of the four things that need to be accomplished by the generic planning task set?
A) Develop overall project strategy
B) Identify the functionality to deliver in each software increment

C) Create a detailed schedule for the complete software project

D) Devise a means of tracking progress on a regular basis

A B C D

----------: C

6： Which of the following are tasks in the generic task set for construction?

A) Build a software component

B) Create a user interface

C) Unit test the component

D) Assess the quality of the component

E) both a and c

A B C D E

----------: E

7：Software engineers collaborate with customers to define which of the following?

A) Customer visible usage scenarios

B) Important software features

C) System inputs and outputs

D) All of the above

A B C D

----------: D

8： Everyone on the software team should be involved in the planning activity so that we can

A) reduce the granularity of the plan

B) analyze requirements in depth

C) get all team members to "sign up" to the plan

D) begin design

A B C D

----------: C

9：The essence of software engineering practice might be described as understand the problem, plan a solution, carry out the plan, and examine the result for accuracy.

A) True

B) False

A B

----------: A

10：Teams using agile software practices never create models.

A) True

B) False

A B

----------: B

11： Analysis models depict software in which three representations?

A) architecture, interface, component
B) cost, risk, schedule
C) information, function, behavior
D) None of the above
A B C D

----------: C
12：The customer can directly observe both the difference between the internal quality of a design and its external quality?
A) True
B) False
A B

----------: B
13：Every communication activity should have a facilitator to make sure that the customer is not allowed to dominate the proceedings.
A) True
B) False
A B

----------: B
14：Many of the tasks from the generic task sets for analysis modeling and design can be conducted in parallel with one another.
A) True
B) False
A B

----------: A
15：What role(s) do user stories play in agile planning?
A) Define useful software features and functions delivered to end-users
B) Determine a schedule used to deliver each software increment
C) Provide a substitute to performing detailed scheduling of activities
D) Used to estimate the effort required build the current increment
E) both a and d
A B C D

----------: D
16： A successful test is one that discovers at least one as-yet undiscovered error.
A) True
B) False
A B

----------: A
二、主观题

17：What questions make up Boehm’s W5HH principle?

参考答案: Why is the system being developed?
What will be done?
When will it be accomplished?
Who is responsible for a function?
Where will they organizationally be located?
How will the job be done technically and managerially?
How much of each resource is needed?
18：Describe the differences between software construction and software deployment.

参考答案: Software construction is concerned with coding and testing of a software increment. Deployment is concerned with the delivery of an operation software product to the end-user, supporting the product during active use, and processing user feedback concerning the product usefulness.
19：What is the purpose of asking context-free questions as a means of beginning the software engineering communications activity?

参考答案: Gain a basic understanding of the problem, the people who want a solution, the nature of the solution desired, and the effectiveness of the communications activity itself.
20：Describe the key elements of construction practice.

参考答案: Construction practice is made up of the coding and testing tasks that lead to the delivery of operational software to the customer or end-user. Coding is concerned with the selection of the programming languages, tools, standards, and environments needed to implement the design. Testing involves validation of individual components, verifying the successful integration of components into the system, and acceptance of the completed system by the customer.

Chapter 6
一、客观题
1：By following modern system engineering practices simulation of reactive systems is no longer necessary.
A) True
B) False
A B

----------: B
2：The system model template contains which of the following elements
A) input

B) output
C) user interface
D) all of the above
A B C D

----------: D
3：During business process engineering, three different architectures are examined.
A) applications, data, technology infrastructure
B) communications, organization, financial infrastructure
C) network, database, reporting structure
D) systems, requirements, data structure
A B C D

----------: A
4：The top level of the hierarchical model of a system is known as the
A) AFD
B) DFD
C) SCD
D) SFD
A B C D

----------: C
5：The goal of product engineering is to translate the customer\'s desire for a set of defined capabilities into a working product.
A) True
B) False
A B

----------: A
6：Software engineers do not need to consider hardware when designing a computer-based system.
A) True
B) False
A B

----------: B
7：To construct a system model the engineer should consider which of the following restraining factors?
A) assumptions
B) budget
C) constraints
D) schedule
E) both a and c
A B C D E

----------: E

8：Which of the following can be elements of computer-based systems?

A) documentation

B) software

C) people

D) hardware

E) all of the above

A B C D E

----------: E

9： UML notations that can be used to model the hardware and software elements of a system are

A) Activity diagrams

B) Class diagrams

C) Deployment diagrams

D) Use-case diagrams

E) a, b, and c

A B C D E

----------: E

10： Which elements of business processing engineering are the responsibilities of the software engineer?

A) business area analysis

B) business system design

C) construction and integration

D) information strategy planning

E) both b and c

A B C D E

----------: E

11：The system engineering process usually begins with the

A) detailed view

B) domain view

C) element view

D) world view

A B C D

----------: D

12：The architecture components for product engineering are

A) data, hardware, software, people

B) data, documentation, hardware, software

C) data, hardware, software, procedures

D) documentation, hardware, people, procedures

A B C D

----------: A

二、主观题

13：In the context of systems engineering what is product engineering?

参考答案: To goal of product engineering is to translate the customer’s desires into a working product. To achieve this goal product engineering must derive a system architecture and infrastructure. The architecture encompasses four distinct system components (software, hardware, databases, and people).

14：What are the six elements that are present in most computer-based systems?

参考答案: software, hardware, people, database, documentation, procedures

15：What is the goal of business process engineering?

参考答案: To define architectures (data, applications, technology infrastructure) that enable a business to use information effectively.

16：Describe the activities for a generic system modeling process.

参考答案: A systems model template is used to initially allocate the system elements to each of the five processing regions (user interface, input, system function and control, output, maintenance and self-test). A system context diagram (SCD) is created to establish the boundary between the system and the environment. A system flow diagram (SFD) is then created from the SCD to define the major subsystems and to show the lines of information (data and control) flow. Writing an SCD and SFD then refines each subsystem, as if it were a stand-alone system. The system specification is developed by writing a narrative description for each subsystem and definitions for the data that flow between subsystems.

Chapter 7

一、客观题

1：The system specification describes the

A) Function, performance and constraints of a computer-based system

B) implementation of each allocated system

C) element software architecture

D) time required for system simulation

A B C D

----------: A

2：In win-win negotiation, the customer\'s needs are met even though the developer\'s need may not be.

A) True

B) False

A B

----------: B

3： During project inception the intent of the of the tasks are to determine

A) basic problem understanding

B) nature of the solution needed

C) people who want a solution

D) none of the bbove

E) a, b and c

A B C D E

----------: E

4：The nature of collaboration is such that all system requirements are defined by consensus of a committee of customers and developers.

A) True

B) False

A B

----------: B

5：Analysis patterns facilitate the transformation of the analysis model into a design model by suggesting reliable solutions to common problems.

A) True

B) False

A B

----------: B

6： Developers and customers create use-cases to help the software team understand how different classes of end-users will use functions.

A) True

B) False

A B

----------: A

7：The result of the requirements engineering elaboration task is an analysis model that defines which of the following problem domain(s)?

A) information

B) functional

C) behavioral

D) all of the above

A B C D

----------: D

8： A stakeholder is anyone who will purchase the completed software system under development.

A) True

B) False

A B

----------: B

9： Use-case actors are always people, never system devices.

A) True

B) False

A B

----------: B

10： Which of the following is not one of the requirement classifications used in Quality Function Deployment (QFD)?

A) exciting

B) expected

C) mandatory

D) normal

A B C D

----------: C

11： The job of the requirements engineer is to categorize all stakeholder information in a way that allows decision makers to choose an internally consistent set of requirements.

A) True

B) False

A B

----------: A

12： The use of traceability tables helps to

A) debug programs following the detection of run-time errors

B) determine the performance of algorithm implementations

C) identify, control, and track requirements changes

D) none of the above

A B C D

----------: C

13： Requirements engineering is a generic process that does not vary from one software project to another.

A) True

B) False

A B

----------: A

14：In requirements validation the requirements model is reviewed to ensure its technical feasibility.

A) True

B) False

A B

----------: B

15：Which of the following is not one of the context-free questions that would be used during project inception?

A) What will be the economic benefit from a good solution?

B) Who is against this project?

C) Who will pay for the work?

D) Who will use the solution?

A B C D

----------: B

16： In collaborative requirements gathering, the facilitator

A) cannot be a member of the software team

B) cannot be a customer

C) controls and facilitates the process

D) must be an outsider

A B C D

----------: C

17： Which of following is not a UML diagram used creating a system analysis model?

A) activity diagram

B) class diagram

C) dataflow diagram

D) state diagram

A B C D

----------: C

18：The best way to conduct a requirements validation review is to

A) examine the system model for errors

B) have the customer look over the requirements

C) send them to the design team and see if they have any concerns

D) use a checklist of questions to examine each requirement

A B C D

----------: D

19：It is relatively common for different customers to propose conflicting requirements, each arguing that his or her version is the right one.

A) True

B) False

A B

----------: A

20：The work products produced during requirement elicitation will vary depending on the

A) size of the budget

B) size of the product being built

C) software process being used

D) stakeholders needs

A B C D

----------: B

21：Three things that make requirements elicitation difficult are problems of

A) budgeting

B) scope

C) understanding

D) volatility

E) b, c and d

A B C D E

----------: E

二、主观题

22：What are the six steps for requirements engineering?

参考答案: 起始、导出、精化、协商、规格说明、确认和需求管理

Inception

Elicitation

Elaboration

Negotiation

Specification

Requirements validation

23：

What three deployments are used in Quality Function Deployment (QFD)?

参考答案:

功能、信息、任务

Function deployment

Information deployment

Task deployment

24：Which UML diagrams are useful for analysis modeling? Provide an example of each.

参考答案: Use-case diagram

Activity diagram

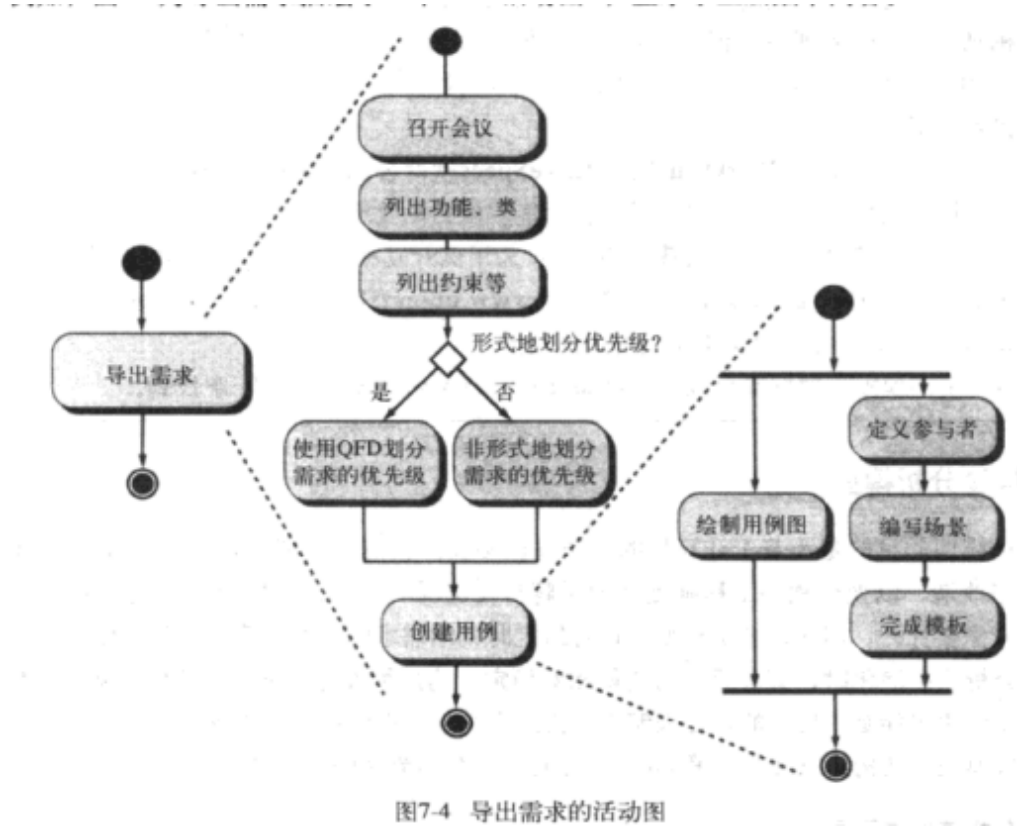


图7-4 导出需求的活动图

Class diagram

图7-5 传感器的类图

State diagram

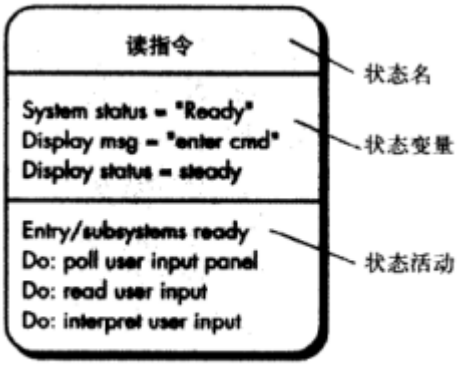


图7-6 UML状态图表示

See figures in SEPA for typical examples.

25：Describe the weaknesses of use-cases as part of the requirements engineering process.

参考答案:

1. 描述不统一
2. 行为不一定能显式定义
3. 不面向对象
4. 趋向于分解用例

Chapter 8

一、客观题

1：

UML activity diagrams are useful in representing which analysis model elements?

A) Behavioral elements

B) Class-based elements

C) Flow-based elements

D) Scenario-based elements

A B C D

----------: D

2：Which of these is not an element of an object-oriented analysis model?

A) Behavioral elements

B) Class-based elements

C) Data elements

D) Scenario-based elements

A B C D

----------: C

3：In analysis models the only data objects that need representation are those that will be implemented using software classes.

A) True
B) False
A B

----------: B

4：The values that are assigned to an object\'s attributes make that object unique.
A) True
B) False
A B

----------: A

5： Operations are object procedures that are invoked when an object receives a message.
A) True
B) False
A B

----------: A

6： Which of the following should be considered as candidate objects in a problem space?
A) events
B) people
C) structures
D) all of the above
A B C D

----------: D

7： Events occur whenever a(n)
A) actor and the OO system exchange information
B) class operation is invoked
C) messages are passed between objects
D) all of the above
A B C D

----------: A

8： The data flow diagram
A) depicts relationships between data objects
B) depicts functions that transform the data flow
C) indicates how data are transformed by the system
D) indicates system reactions to external events
E) both b and c
A B C D E

----------: E

9：Object-oriented domain analysis is concerned with the identification and specification of reusable classes within an application domain.

A) True
B) False
A B

----------: A

10： A generalized description of a collection of similar objects is a
A) class
B) instance
C) subclass
D) super class
A B C D

----------: A

11：The relationships shown in a data model must be classified to show their
A) cardinality
B) directionality
C) modality
D) probability
E) both a and c
A B C D E

----------: E

12：Which of the following is not an objective for building an analysis model?
A) define set of software requirements that can be validated
B) describe customer requirements
C) develop an abbreviated solution for the problem
D) establish basis for software design
A B C D

----------: C

13：The data dictionary contains descriptions of each software
A) control item
B) data object
C) diagram
D) notation
E) both a and b
A B C D E

----------: E

14： Class responsibilities are defined by
A) its attributes only
B) its collaborators
C) its operations only
D) both its attributes and operations

A B C D

----------: D

15： The entity relationship diagram

A) depicts relationships between data objects

B) depicts functions that transform the data flow

C) indicates how data are transformed by the system

D) indicates system reactions to external events

A B C D

----------: A

16：Which of the following is not one of the broad categories used to classify operations?

A) computation

B) data manipulation

C) event monitors

D) transformers

A B C D

----------: D

17：An analysis package involves the categorization of analysis model elements into useful groupings.

A) True

B) False

A B C D

----------: A

18：Control flow diagrams are

A) needed to model event driven systems.

B) required for all systems.

C) used in place of data flow diagrams.

D) useful for modeling real-time systems.

E) both a and d

A B C D E

----------: E

19： Attributes cannot be defined for a class until design has been completed.

A) True

B) False

A B

----------: B

20：Which of the following items does not appear on a CRC card?

A) class collaborators

B) class name

C) class reliability

D) class responsibilities

A B C D

----------: C

21：The state diagram

A) depicts relationships between data objects

B) depicts functions that transform the data flow

C) indicates how data are transformed by the system

D) indicates system reactions to external events

A B C D

----------: D

22：The data flow diagram must be augmented by descriptive text in order to describe the functional requirements for a software product.

A) True

B) False

A B

----------: A

23：Which of the following items does not appear on a CRC card?

A) class collaborators

B) class name

C) class reliability

D) class responsibilities

A B C D

----------: C

24： In many cases there is no need to create a graphical representation of a usage scenario.

A) True

B) False

A B

----------: A

25： For purposes of behavior modeling a state is any

A) consumer or producer of data.

B) data object hierarchy.

C) observable mode of behavior.

D) well defined process.

A B C D

----------: C

二、主观题

26：Describe the general process of creating a data flow diagram (DFD).

参考答案:

1. 第 0 层整个系统描述成一个泡泡
2. 用语法分析用例精化扩展产生第 1 层，
3. 箭头上添加数据名称，
4. 第一层中的处理进一步精到更低的层次，
5. 求精继续进行，直到每个泡泡都执行一个简单的操作

27：List the elements of the structured analysis model and explain the role of each element.

参考答案:

Data dictionary - contains descriptions of all data objects produced or consumed by the software

Entity relationship diagram (ERD) - depicts data object relationships

Data flow diagram (DFD) - provides an indication of how data are transformed as they move through the system and the functions that transform the data flow

State transition diagram (STD) - indicates system responses to external events

28 ： Explain why encapsulation, inheritance, and polymorphism are three important characteristics of object-oriented systems.

参考答案: Classes provide an encapsulation (information hiding) mechanism by which data (attributes) have their access controlled by a set of operations. When properly implemented this yields systems with low coupling and high modularity. Inheritance provides a mechanism by which changes to higher level classes can be propagated to lower level classes quickly. Polymorphism reduces the effort required to extend an object system by enabling a number of different operations to share the same name.

29：Which UML (unified modeling language) diagrams are useful in object-oriented analysis modeling?

参考答案:

Scenario-based models – use-case diagrams, activitiy diagrams, swimlane diagrams

Class-based models – class diagrams

State-based models – state diagrams, sequence diagrams

30：What are the data modeling elements represented in the entity relationship diagram (ERD)?

参考答案:

Data objects - any entity producing or consuming information

Attributes - data characteristics associated with a data object instance

Relationships - indicate manner in which data objects are connected

31：What are the steps needed to build an object-behavior model?

参考答案:

1. Evaluate the use-cases to understand the interaction sequence within the system.
2. Identify events that drive the interaction sequence and how the events relate to specific objects.
3. Create an event trace for each use-case.
4. Build a state transition diagram for the system.
5. Review the object-behavior model to verify accuracy and consistency.

32：How is an object-relationship model built from a set of CRC (class responsibility collaborator) cards?

参考答案:
The network of collaborating objects is drawn using the CRC card names for objects and unlabeled lines to indicate collaborators.
Unlabeled connecting lines are named, based on the collaborators and relationships listed on the CRC cards.
Once the named relationships have been established, each connecting line end is evaluated to determine its cardinality.

Chapter 9
一、客观题
1：Information hiding makes program maintenance easier by hiding data and procedure from unaffected parts of the program.
A) True
B) False
A B

----------: A
2：Which of the following is not one of the five design class types
A) Business domain classes
B) Entity classes
C) Process classes
D) User interface classes
A B C D

----------: B
3： Which design model elements are used to depict a model of information represented from the user's view?
A) Architectural design elements
B) Component-level design elements
C) Data design elements
D) Interface design elements
A B C D

----------: C

4： One of the key problems in software reuse is the inability to find existing reusable design patterns when hundreds of candidates exist.

A) True

B) False

A B

----------: A

5：Which of the following is not a characteristic common to all design methods?

A) configuration management

B) functional component

C) notation quality assessment

D) guidelines refinement heuristics

A B C D

----------: A

6：Software design is an iterative generic process that may be applied without modification to any software project.

A) True

B) False

A B

----------: B

7： Which of these are characteristics of a good design?

A) exhibits strong coupling between its modules

B) implements all requirements in the analysis model

C) includes test cases for all components

D) provides a complete picture of the software

E) both b and d

A B C D E

----------: E

8：When using structured design methodologies the process of stepwise refinement is unnecessary.

A) True

B) False

A B

----------: B

9：Design patterns are best thought of as coding patterns.

A) True

B) False

A B

----------: B

10：Which design model is analogous to the detailed drawings of the access points and external utilities for a house?

A) Architectural design

B) Component-level design

C) Data design

D) Interface design

A B C D

----------: D

11：Since modularity is an important design goal it is not possible to have too many modules in a proposed design.

A) True

B) False

A B

----------: B

12： The importance of software design can be summarized in a single word

A) accuracy

B) complexity

C) efficiency

D) quality

A B C D

----------: D

13： Which of the following models can be used to represent the architectural design of a piece of software.

A) Dynamic models

B) Functional models

C) Structural models

D) All of the above

A B C D

----------: D

14：Information hiding makes program maintenance easier by hiding data and procedure from unaffected parts of the program.

A) True

B) False

A B

----------: A

15：Which design is analogous to the floor plan of a house?

A) Architectural design

B) Component-level design

C) Data design

D) Interface design

A B C D

----------: A

16： Inheritance provides a mechanism by which changes to lower level classes can be propagated to all super classes quickly.

A) True

B) False

A B

----------: B

17： Which design model is analogous to a set of detailed drawings for each room in a house?

A) Architectural design

B) Component-level design

C) Data design

D) Interface design

A B C D

----------: B

18： What types of abstraction are used in software design?

A) control

B) data

C) environmental

D) procedural

E) a, b and d

A B C D E

----------: E

19： Which of the following are areas of concern in the design model?

A) architecture

B) data

C) interfaces

D) project scope

E) a, b and c

A B C D E

----------: E

20： Software designs are refactored to allow the creation of software that is easier to integrate, easier to test, and easier to maintain.

A) True

B) False

A B

----------: A

21：Polymorphism reduces the effort required to extend an object system by

A) coupling objects together more tightly.

B) enabling a number of different operations to share the same name.

C) making objects more dependent on one another.

D) removing the barriers imposed by encapsulation

A B C D

----------: B

22： The deployment design elements specify the build order for the software components.

A) True

B) False

A B

----------: B

23： Coupling is a qualitative indication of the degree to which a module

A) can be written more compactly.

B) focuses on just one thing.

C) is able to complete its function in a timely manner.

D) is connected to other modules and the outside world.

A B C D

----------: D

24：Design patterns are not applicable to the design of object-oriented software?

A) True

B) False

A B

----------: B

25：Frameworks and design patterns are the same thing as far as designers are concerned.

A) True

B) False

A B

----------: B

26：Cohesion is a qualitative indication of the degree to which a module

A) can be written more compactly.

B) focuses on just one thing.

C) is able to complete its function in a timely manner.

D) is connected to other modules and the outside world.

A B C D

----------: B

二、主观题

27：How is a transaction center different from a transform center in a data flow diagram?

参考答案:
Transaction centers convert an external information flow into one of many action paths inside the system. Transform centers map the incoming external information into outgoing external world information.
28：Describe the principle of information hiding as it applies to software design.

参考答案:
The principle of information hiding implies that modules only share information with each other on a "need to know" basis to achieve some specific software function. Hiding enforces the procedural constraints to both the module procedural detail and any data structures local to the module.
29：What is the goal of data design?

参考答案: To create a model of the data/information that is represented at a high level of abstraction (user\'s view). This model is successively refined into more implementation specific representations that can be processed by the computer-based system.
30：Explain how effective modular design is achieved through functional independence of the individual modules?

参考答案: Functional independence of modules is achieved by making modules single-minded (high cohesion) and preventing excessive interaction (low coupling) with other modules or system elements. Independent modules are easier to develop, maintain, and test, because the impact of side effects is reduced (as is the propagation of errors). This also makes it easier to perform parallel implementation of modules.
31：What are the elements that make up a software architectural style?

参考答案: Set of components that perform required system functions.
Set of connectors allowing communications among the components.
Constraints describing how the components maybe integrated to form a system.
Semantic models that enable the designer to understand the overall system properties by analyzing the known properties of its components.
32：List the four design models required for a complete specification of a software design and the role of each.

参考答案: Data design - high level model depicting user’s view of the data or information.
Architecture design – shows relationships and collaborations among specific analysis model software and hardware elements
Interface design - interface depicts a set of operations that describe the externally observable behavior of a class and provides access to its operations
Component-level design - Describes the internal detail of each software component
33：Describe the types of dependencies that can exist in an architectural design.

参考答案: Sharing dependencies - represent the dependence relationships among consumers whose use the same source or producers who have the same consumers.
Flow dependencies - represent dependence relationships between producers and consumers of resources
Constrained dependencies - represent constraints on the relative flow of control among a set of activities
34：Describe the differences between a design pattern and a framework.

参考答案: Design patterns are more abstract than frameworks. Frameworks are often code-based. Frameworks can contain design patterns, but design patterns cannot contain frameworks. Design patterns are less specialized than frameworks.
35：List three characteristics that can serve as a guide to evaluate design quality.

参考答案:
Design implements all explicit requirements from the analysis model, as well as accommodating implicit customer requirements.
Design must be understandable to the people who generate the code to implement design, those who test it, and those who support it.
Design must provide a complete picture of the software, addressing the data, functional, and behavioral domains from an implementation perspective.

Chapter 10
一、客观题
1：When you encounter both transform flow and transaction flow in the same DFD the flow is partitioned and the appropriate mapping technique is used on each part of the DFD.
A) True
B) False
A B

----------: A
2：The architectural representations can be an enabler for communication among project stakeholders.

A) True
B) False
A B

----------: A

3：An architectural style encompasses which of the following elements?

A) constraints
B) set of components
C) semantic models
D) syntactic models
E) a, b and c
A B C D E

----------: E

4：The criteria used to assess the quality of an architectural design should be based on system

A) accessibility
B) control
C) data
D) implementation
E) both b and c
A B C D E

----------: E

5：In the architecture trade-off analysis method the architectural style should be described using the

A) data flow view
B) module view
C) process view
D) user view
E) a, b and c
A B C D E

----------: E

6：In transaction mapping the first level factoring results in the

A) creation of a CFD
B) derivation of the control hierarchy
C) distribution of worker modules
D) refinement of the module view
A B C D

----------: B

7：The best representation of system architecture is an operational software prototype.

A) True
B) False

A B

----------: B

8： Once selected, archetypes always need to be refined further as architectural design proceeds.

A) True

B) False

A B

----------: A

9： When the overall flow in a segment of a data flow diagram is largely sequential and follows straight-line paths, _____ is present.

A) low coupling

B) good modularity

C) transaction flow

D) transform flow

A B C D

----------: D

10： When a single item that triggers other data flow along one of many paths of a data flow diagram, _____ characterizes the information flow.

A) high coupling

B) poor modularity

C) transaction flow

D) transform flow

A B C D

----------: C

11： Quantitative methods for assessing the quality of proposed architectural designs are readily available.

A) True

B) False

A B

----------: B

12： During the process of modeling the system in context, systems that interact with the target system are represented as

A) Peer-level systems

B) Subordinate systems

C) Superordinate systems

D) Working systems

E) a, b and c

A B C D E

----------: E

13： Before an architectural pattern can be chosen for use in a specific system it must have a code implementation to facilitate its reuse.

A) True

B) False

A B

----------: B

14：A useful technique for evaluating the overall complexity of a proposed architecture is to look at the component

A) cohesion flow

B) dependencies

C) sharing dependencies

D) size

E) both b and c

A B C D E

----------: E

15：A successful application of transform or transaction mapping to create an architectural design is supplemented by

A) entity relationship diagrams

B) module interface descriptions

C) processing narratives for each module

D) test cases for each module

E) both b and c

A B C D E

----------: E

16：Which of the following is not an example of infrastructure components that may need to be integrated into the software architecture?

A) Communications components

B) Database components

C) Interface components

D) Memory management components

A B C D

----------: C

17： To determine the architectural style or combination of styles that best fits the proposed system, requirements engineering is used to uncover

A) algorithmic complexity

B) characteristics and constraints

C) control and data

D) design patterns

A B C D

----------: B

18：Which of these characteristics are true of a data warehouse, but not a typical data base?

A) business level orientation

B) currency of information

C) integration

D) nonvolatility

E) both c and d

A B C D E

----------: E

19： Data design actually begins during the creation of the analysis model, not the architectural model.

A) True

B) False

A B

----------: A

二、主观题

20：How does the object-oriented view of component-level design differ from the conventional view?

参考答案: The object-oriented view focuses on the elaboration of design classes that come from both the problem and infrastructure domains. Classes are elaborated by specifying messaging details, identifying interfaces, defining attribute data structures, and describing process flow for operations. In the traditional view, three of components are refined: control modules, domain modules, and infrastructure modules. This requires representations to be created for data structures, interfaces, and algorithms for each program module in enough detail to generate programming language source code.

21：What are the elements that make up a software architectural style?

参考答案: Set of components that perform required system functions.

Set of connectors allowing communications among the components.

Constraints describing how the components maybe integrated to form a system.

Semantic models that enable the designer to understand the overall system properties by analyzing the known properties of its components.

22：

What is the goal of data design?

参考答案: To create a model of the data/information that is represented at a high level of abstraction (user\'s view). This model is successively refined into more implementation specific representations that can be processed by the computer-based system.

23：Describe the types of dependencies that can exist in an architectural design.

参考答案: Sharing dependencies - represent the dependence relationships among consumers

whose use the same source or producers who have the same consumers.
Flow dependencies - represent dependence relationships between producers and consumers of resources
Constrained dependencies - represent constraints on the relative flow of control among a set of activities
24：
How is a transaction center different from a transform center in a data flow diagram?

参考答案: Transaction centers convert an external information flow into one of many action paths inside the system. Transform centers map the incoming external information into outgoing external world information.

Chapter 11
、客观题
1：Which of the following is not one of the four principles used to guide component-level design?
A) Dependency Inversion Principle
B) Interface Segregation Principle
C) Open-Closed Principle
D) Parsimonious Complexity Principle
A B C D

----------: D
2： In the context of object-oriented software engineering a component contains
A) attributes and operations
B) instances of each class
C) roles for each actor (device or user)
D) a set of collaborating classes
A B C D

----------: D
3：The use of stereotypes can help identify the nature of components at the detailed design level.
A) True
B) False
A B

----------: A
4： A program design language (PDL) is often a
A) combination of programming constructs and narrative text
B) legitimate programming language in its own right
C) machine readable software development language
D) useful way to represent software architecture
A B C D

----------: A

5：Software engineers always need to create components from scratch in order to meet customer expectations fully.

A) True

B) False

A B

----------: B

6： Which of these is a graphical notation for depicting procedural detail?

A) process diagram

B) decision table

C) ER diagram

D) flowchart

A B C D

----------: D

7： In component design, elaboration requires which of the following elements to be described in detail?

A) Source code

B) Attributes

C) Interfaces

D) Operations

E) b, c and d

A B C D E

----------: E

8： A decision table should be used

A) to document all conditional statements

B) to guide the development of the project management plan

C) only when building an expert system

D) when a complex set of conditions and actions appears in a component

A B C D

----------: D

9： In the most general sense a component is a modular building block for computer software.

A) True

B) False

A B

----------: A

10： During component-level design it is customary to ignore organization issues like subsystem membership or packaging.

A) True

B) False

A B

----------: B

11：In traditional software engineering, modules must serve in which of the following roles?

A) Control component

B) Infrastructure component

C) Problem domain component

D) All of the above

A B C D

----------: D

12：Which of these constructs is used in structured programming?

A) branching

B) condition

C) repetition

D) sequence

E) b, c, and d

A B C D E

----------: E

13：Software coupling is a sign of poor architectural design and can always be avoided in every system.

A) True

B) False

A B

----------: B

14：Which of these criteria are useful in assessing the effectiveness of a particular design notation?

A) maintainability

B) modularity

C) simplicity

D) size

E) a, b, and c

A B C D E

----------: E

15：In component-level design "persistent data sources" refer to

A) Component libraries

B) Databases

C) Files

D) All of the above

E) both b and c

A B C D E

----------: E

16：Classes and components that exhibit functional, layer, or communicational cohesion are relatively easy to implement, test, and maintain.

A) True

B) False

A B

----------: A

17：The object constraint language (OCL) complements UML by allowing a software engineer to use a formal grammar to construct unambiguous statements about design model elements.

A) True

B) False

A B

----------: A

18：OCL is not strong enough to be used to describe pre- or post conditions for design actions.

A) True

B) False

A B

----------: B

二、主观题

19：How does the object-oriented view of component-level design differ from the conventional view?

参考答案: The object-oriented view focuses on the elaboration of design classes that come from both the problem and infrastructure domains. Classes are elaborated by specifying messaging details, identifying interfaces, defining attribute data structures, and describing process flow for operations. In the traditional view, three of components are refined: control modules, domain modules, and infrastructure modules. This requires representations to be created for data structures, interfaces, and algorithms for each program module in enough detail to generate programming language source code.

20：Describe the differences between the software engineering terms coupling and cohesion?

参考答案: Cohesion implies that a component or class encapsulates only the attributes and operations closely related to one another and to the class itself. Coupling is a qualitative measure of the degree to which components are connected to one another.

21：List three characteristics that can be to assess the quality of a design notation.

参考答案: Modularity, simplicity, ease of editing, machine readability, maintainability, structure enforcement, automatic processing, data representation, logic verification, "code-to" ability

22：What are the steps used to complete the component-level design for a software development project?

参考答案:

Identify all design classes that correspond to the problem domain.

Identify all design classes that correspond to the infrastructure domain.

Elaborate all design classes that are not acquired as reusable components.

Identify persistent data sources (databases and files) and identify the classes required to manage them.

Develop and elaborate behavioral representations for each class or component.

Elaborate deployment diagrams to provide additional implementation detail.

Factor every component-level diagram representation and consider alternatives.

Chapter 12

一、客观题

1：Which of the following interface design principles reduces the user's memory load?

A) define intuitive shortcuts

B) disclose information in a progressive fashion

C) establish meaningful defaults

D) provide an on-line tutorial

E) answers a, b and c

A B C D E

----------: E

2：Several common design issues surface for almost every user interface including

A) adaptive user profiles

B) error handling resolution of graphics

C) displays system

D) response time

E) both b and d

A B C D E

----------: E

3：Which model depicts the look and feel of the user interface along with all supporting information?

A) Implementation model

B) user model

C) user's model

D) system perception

A B C D

----------: A

4：Which approach(es) to user task analysis can be useful in user interface design?

A) have users indicate their preferences on questionnaires

B) rely on the judgement of experienced programmers

C) study existing computer-based solutions

D) observe users performing tasks manually

E) both c and d

A B C D E

----------: E

5：Which of the following interface design principles reduces the user's memory load?

A) define intuitive shortcuts

B) disclose information in a progressive fashion

C) establish meaningful defaults

D) provide an on-line tutorial

E) answers a, b and c

A B C D E

----------: E

6：Interface design patterns typically include a complete component-level design (design classes, attributes, operations, and interfaces).

A) True

B) False

A B

----------: A

7：Which model depicts the image of a system that an end user creates in his or her head?

A) design model

B) user model

C) system model

D) system perception

A B C D

----------: D

8：One means of defining user interface objects and actions is to conduct a grammatical parse of the user scenario.

A) True

B) False

A B

----------: A

9：The computer\'s display capabilities are the primary determinant of the order in which user

interface design activities are completed.

A) True

B) False

A B

----------: B

10：Which model depicts the profile of the end users of a computer system?

A) design model

B) implementation model

C) user model

D) user's model

A B C D

----------: C

11： Usability questionnaires are most meaningful to the interface designers when completed by

A) customers

B) experienced programmers

C) product users

D) project managers

A B C D

----------: C

12：Which of the following interface design principles does not allow the user to remain in control of the interaction with a computer?

A) allow interaction to interruptible

B) allow interaction to be undoable

C) hide technical internals from casual users

D) only provide one defined method for accomplishing a task

A B C D

----------: D

13：It is sometimes possible that the interface designer is constrained by environmental factors that mitigate against ease of use for many users.

A) True

B) False

A B

----------: A

14：The reason for reducing the user\'s memory load is make his or her interaction with the computer quicker to complete.

A) True

B) False

A B

----------: B

15：User interface development systems typically provide several mechanisms for building interface prototypes including

A) code generation

B) drawing tools

C) input validation

D) windows handlers

E) both c and d

A B C D E

----------: E

16：Object-oriented analysis techniques can be used to identify and refine user task objects and actions without any need to refer to the user voice.

A) True

B) False

A B

----------: B

17：If past interactive models have created certain user expectations it is not generally good to make changes to the model.

A) True

B) False

A B

----------: A

18：Which of these framework activities is not normally associated with the user interface design processes?

A) cost estimation

B) interface construction

C) interface validation

D) user and task analysis

A B C D

----------: A

19：The reason for reducing the user\'s memory load is make his or her interaction with the computer quicker to complete.

A) True

B) False

A B

----------: B

20：Add-on help facilities are almost always better received by users than integrated help facilities.

A) True

B) False

A B C D

----------: B

21：Several usability measures can be collected while observing users interacting with a computer system including

A) down time for the application

B) number of user errors

C) software reliability

D) time spent looking at help materials

E) both b and d

A B C D E

----------: E

22：Interface consistency implies that

A) each application should have its own distinctive look and feel

B) input mechanisms remain the same throughout the application

C) navigational methods are context sensitive

D) visual information is organized according to a design standard

E) both b and d

A B C D E

----------: E

二、主观题

23：List four interface design issues present in the development of most user interfaces.

参考答案:

System response time

User help facilities

Error information handling

Menu and command labeling

Application accessibility

Internationalization

24：What framework activities are completed when following an evolutionary (or spiral) user interface development process?

参考答案:

User, task, and environmental analysis

Interface design

Interface construction
Interface validation
25：List three principles that should be applied when building any user interface.

参考答案:
Place user in control.
Reduce user\'s memory load.
Make the interface consistent.

26：What elements of a user interface design can be evaluated without building a working computer prototype?

参考答案: The length and complexity of the interface specification (provides insight into learning effort required by user).
The number of user tasks specified and the number of user actions required to complete each (provide estimates of system efficiency). Number of tasks, actions, and states in the design model (imply the memory load imposed on the user).
Interface style, help facilities, and error handling protocol provide a general indication of complexity of the interface and its acceptance by the users.

Chapter 13
一、客观题
1：Drivers and stubs are not needed for unit testing because the modules are tested independently of one another.
A) True
B) False
A B

----------: B
2：Security testing attempts to verify that protection mechanisms built into a system protect it from improper penetration.
A) True
B) False
A B

----------: A
3：Stress testing examines the pressures placed on the user during system use in extreme environments.
A) True
B) False
A B

----------: B

4：In software quality assurance work there is no difference between software verification and software validation.

A) True

B) False

A B

----------: B

5：Class testing of object-oriented software is equivalent to unit testing for traditional software.

A) True

B) False

A B

----------: A

6：What is the normal order of activities in which traditional software testing is organized?

a. integration testing b. system testing c. unit testing d.validation testing

A) a, d, c, b

B) b, d, a, c

C) c, a, d, b

D) d, b, c, a

A B C D

----------: C

7：Recovery testing is a system test that forces the software to fail in a variety of ways and verifies that software is able to continue execution without interruption.

A) True

B) False

A B

----------: B

8：Performance testing is only important for real-time or embedded systems.

A) True

B) False

A B

----------: B

9：The OO testing integration strategy involves testing

A) groups of classes that collaborate or communicate in some way

B) single operations as they are added to the evolving class implementation

C) operator programs derived from use-case scenarios

D) none of the above

A B C D

----------: A

10：Software validation is achieved through a series of tests performed by the user once the

software is deployed in his or her work environment.

A) True

B) False

A B

----------: B

11：Smoke testing might best be described as

A) bulletproofing shrink-wrapped software

B) rolling integration testing

C) testing that hides implementation errors

D) unit testing for small programs

A B C D

----------: B

12：Which of the following strategic issues needs to be addressed in a successful software testing process?

A) conduct formal technical reviews prior to testing

B) specify requirements in a quantifiable manner

C) use independent test teams

D) wait till code is written prior to writing the test plan

E) both a and b

A B C D E

----------: E

13：Which of the following need to be assessed during unit testing?

A) algorithmic performance

B) code stability

C) error handling

D) execution paths

E) both c and d

A B C D E

----------: E

14：Top-down integration testing has as it's major advantage(s) that

A) low level modules never need testing

B) major decision points are tested early

C) no drivers need to be written

D) no stubs need to be written

E) both b and c

A B C D E

----------: E

15：The focus of validation testing is to uncover places that a user will be able to observe failure of the software to conform to its requirements.

A) True
B) False
A B

----------: A

16：When testing object-oriented software it is important to test each class operation separately as part of the unit testing process.

A) True
B) False
A B

----------: B

17：Configuration reviews are not needed if regression testing has been rigorously applied during software integration.

A) True
B) False
A B

----------: B

18：Acceptance tests are normally conducted by the

A) developer
B) end users
C) test team
D) systems engineers
A B C D

----------: B

19：Bottom-up integration testing has as it's major advantage(s) that

A) major decision points are tested early
B) no drivers need to be written
C) no stubs need to be written
D) regression testing is not required
A B C D

----------: C

20：The best reason for using Independent software test teams is that

A) software developers do not need to do any testing
B) a test team will test the software more thoroughly
C) testers do not get involved with the project until testing begins
D) arguments between developers and testers are reduced
A B C D

----------: B

21：Debugging is not testing, but always occurs as a consequence of testing.

A) True
B) False
A B

----------: A
22：Which of the following is an approach to debugging?
A) backtracking
B) brute force
C) cause elimination
D) code restructuring
E) a, b, and c
A B C D E

----------: E
23：Regression testing should be a normal part of integration testing because as a new module is added to the system new
A) control logic is invoked
B) data flow paths are established
C) drivers require testing
D) all of the above
E) both a and b
A B C D E

----------: E
24：By collecting software metrics and making use of existing software reliability models it is possible to develop meaningful guidelines for determining when software testing is finished.
A) True
B) False
A B

----------: A
二、主观题
25：What are the key differences between validation testing goals and acceptance testing goals?

参考答案:
In validation testing, the test team seeks to ensure that each software function or performance characteristic conforms to its specification.
In acceptance testing, the test team needs to ensure that the software works correctly for the intended user in his or her normal work environment.
26：List four types of systems tests.

参考答案: • Recovery testing

- Security testing
- Stress testing
- Performance testing

27：Describe object-oriented unit testing.

参考答案: Class testing for OO software is equivalent to unit testing for conventional software. The focus throughout is on designing and testing appropriate sequences of operations to exercise all class states. It makes little sense to test operations or algorithms individually for classes.

28：Why is regression testing an important part of any integration testing procedure?

参考答案: The goal of integration testing is to make sure that independent modules that work correctly on their own do not interfere with one another when added to the same program (unforeseen side effects are always possible). Regression testing checks for defects propagated to other modules by changes made to an existing program.

Chapter 14

一、客观题

1：Condition testing is a control structure testing technique where the criteria used to design test cases is that they

A) rely on basis path testing
B) exercise the logical conditions in a program module
C) select test paths based on the locations and uses of variables
D) focus on testing the validity of loop constructs

A B C D

----------: B

2：Data flow testing is a control structure testing technique where the criteria used to design test cases is that they

A) rely on basis path testing
B) exercise the logical conditions in a program module
C) select test paths based on the locations and uses of variables
D) focus on testing the validity of loop constructs

A B C D

----------: C

3：Loop testing is a control structure testing technique where the criteria used to design test cases is that they

A) rely basis path testing
B) exercise the logical conditions in a program module
C) select test paths based on the locations and uses of variables
D) focus on testing the validity of loop constructs

A B C D

----------: D

4：Black-box testing attempts to find errors in which of the following categories

A) incorrect or missing functions

B) interface errors

C) performance errors

D) all of the above

E) none of the above

A B C D E

----------: D

5：Comparison testing is typically done to test two competing products as part of customer market analysis prior to product release.

A) True

B) False

A B

----------: B

6：Boundary value analysis can only be used to do white-box testing.

A) True

B) False

A B

----------: B

7：Equivalence testing divides the input domain into classes of data from which test cases can be derived to reduce the total number of test cases that must be developed.

A) True

B) False

A B

----------: A

8：The cyclomatic complexity metric provides the designer with information regarding the number of

A) cycles in the program

B) errors in the program

C) independent logic paths in the program

D) statements in the program

A B C D

----------: C

9：Program flow graphs are identical to program flowcharts.

A) True

B) False

A B

----------: B

10：Graph-based testing methods can only be used for object-oriented systems

A) True

B) False

A B

----------: B

11：With thorough testing it is possible to remove all defects from a program prior to delivery to the customer.

A) True

B) False

A B

----------: B

12：The cyclomatic complexity of a program can be computed directly from a PDL representation of an algorithm without drawing a program flow graph.

A) True

B) False

A B

----------: A

13：Multiple class testing is too complex to be tested using random test cases.

A) True

B) False

A B

----------: B

14：Encapsulation of attributes and operations inside objects makes it easy to obtain object state information during testing.

A) True

B) False

A B

----------: B

15：Fault-based testing is best reserved for

A) conventional software testing

B) operations and classes that are critical or suspect

C) use-case validation

D) white-box testing of operator algorithms

A B C D

----------: B

16：Test case design "in the small" for OO software is driven by the algorithmic detail of the

individual operations.

A) True

B) False

A B

----------: A

17：Deep structure testing is not designed to

A) examine object behaviors

B) exercise communication mechanisms

C) exercise object dependencies

D) exercise structure observable by the user

A B C D

----------: D

18：The testing technique that requires devising test cases to demonstrate that each program function is operational is called

A) black-box testing

B) glass-box testing

C) grey-box testing

D) white-box testing

A B C D

----------: A

19：What types of errors are missed by black-box testing and can be uncovered by white-box testing?

A) behavioral errors

B) logic errors

C) performance errors

D) typographical errors

E) both b and d

A B C D E

----------: E

20：Client/server architectures cannot be properly tested because network load is highly variable.

A) True

B) False

A B

----------: B

21：The testing technique that requires devising test cases to exercise the internal logic of a software module is called

A) behavioral testing

B) black-box testing

C) grey-box testing

D) white-box testing

A B C D

----------: D

22：Real-time applications add a new and potentially difficult element to the testing mix

A) performance

B) reliability

C) security

D) time

A B C D

----------: D

23：Random order tests are conducted to exercise different class instance life histories.

A) True

B) False

A B

----------: A

24：Scenario-based testing

A) concentrates on actor and software interaction

B) misses errors in specifications

C) misses errors in subsystem interactions

D) both a and b

A B C D

----------: A

25：Testing OO class operations is made more difficult by

A) encapsulation

B) inheritance

C) polymorphism

D) both b and c

A B C D

----------: D

26：Which of the following are characteristics of testable software?

A) observability

B) simplicity

C) stability

D) all of the above

A B C D

----------: D

27：Use-cases can provide useful input into the design of black-box and state-based tests of OO

software.

A) True

B) False

A B C D

----------: A

28：Which of these techniques is not useful for partition testing at the class level

A) attribute-based partitioning

B) category-based partitioning

C) equivalence class partitioning

D) state-based partitioning

A B C D

----------: C

29：Tests derived from behavioral class models should be based on the

A) data flow diagram

B) object-relation diagram

C) state diagram

D) use-case diagram

A B C D

----------: C

30：Orthogonal array testing enables the test designer to maximize the coverage of the test cases devised for relatively small input domains.

A) True

B) False

A B

----------: A

二、主观题

31：Describe three partitioning strategies that can be used when performing class level testing for OO systems.

参考答案:

State-based partitioning - tests designed so that operations that cause state changes are tested separately from those that do not

Attribute-based partitioning - for each class attribute, operations are classified according to those that use the attribute, those that modify it, and those that do not use or modify the attribute

Category-based partitioning - operations are categorized according to the function performed: initialization, computation, query, or termination

32：Describe the differences between black-box testing and white-box testing.

参考答案: Black-box testing involves testing the functionality of a software component without knowing the details of its internal logic. White-box testing involves testing the independent logic paths with full implementation knowledge.

33：What is equivalence partitioning as it applies to software testing?

参考答案: A black-box testing technique in which the input domain is divided into classes of equivalent data items. Test cases are derived from combinations of elements from each equivalence class. Exhaustive testing of all input domain values is not necessary.

34：What are the attributes of a good software test?

参考答案:
- Has a high probability of finding an error
- Not redundant
- Should be capable of uncovering a whole class of errors
- Should not be too simple or too complex

35：What is scenario-based testing?

参考答案: The user tasks described in the use-cases are used to construct the test cases. It is used to uncover errors that occur when actors interact with the software (focus is on user behavior, not product behavior). Generally it is better to spend more time reviewing the use cases as they are created than spending more time on testing.

36：Describe three control structure testing strategies.

参考答案:

Condition or branch testing -uses test cases that exercise every decision statement in the program.

Data flow testing - selects test paths (definition use chains) according to the locations of variable definitions and uses in the program

Loop testing -tests focus on the validity the repetition constructs (making sure that loops start and stop when they are supposed to)

Chapter 15

一、客观题

1：Because the class is the dominant unit in OO systems, relatively few metrics have been proposed for operations that reside within a class.

A) True

B) False

A B C D

----------: A

2： Which of the following is not a measurable characteristic of an object-oriented design?

A) completeness

B) efficiency

C) size

D) volatility

A B C D

----------: B

3： Which of these are reasons for using technical product measures during software development?

A) large body of scientific evidence supports their use

B) provides software engineers with an objective mechanism for assessing software quality

C) they allow all software quality information to be expressed unambiguously as a single number

D) all of the above

A B C D

----------: B

4： The depth of inheritance tree (DIT) metric can give an OO software designer a reading on the

A) attributes required for each class

B) completion time required for system implementation

C) complexity of the class hierarchy

D) level of object reusability achieved

A B C D

----------: B

5：The Goal/Question/Metric (GQM) paradigm was developed as a technique for assigning blame for software failures.

A) True

B) False

A B C D

----------: B

6： Testing effort can also be estimated using metrics derived from cylcomatic complexity.

A) True

B) False

A B

----------: A

7：If you encounter a class with a large responsibility (large class size or CS value) you should consider

A) making it a base class

B) making it a subclass

C) partitioning the class

D) starting a new class hierarchy

A B C D

----------: C

8：Most testing metrics actually focus on the process of testing rather than the technical characteristics of the tests themselves.

A) True

B) False

A B C D

----------: A

9：The specification metrics proposed by Davis address which two characteristics of the software requirements?

A) functionality and performance

B) performance and completeness

C) specificity and completeness

D) specificity and functionality

A B C D

----------: C

10：The ISO 9126 quality standards for computer software are useful because they lend themselves to direct measurement of software attributes.

A) True

B) False

A B

----------: B

11：Conformance to implicit requirements and customer expectations has no place in modern software quality assurance work.

A) True

B) False

A B

----------: B

12：Halstead's source code metrics are based on the number of

A) modules in the program

B) operands in the program

C) operators in the program

D) volume elements in the program

E) both b and c

A B C D E

----------: E

13：Software testing metrics fall into two broad categories

A) metrics that focus on defect removal effectiveness

B) metrics that focus on test coverage

C) metrics that estimate the duration of the testing process

D) metrics that predict the number of test cases required

E) both b and d

A B C D E

----------: E

14：Interface metrics are used to assess the complexity of the module's input and output relationships with external devices.

A) True

B) False

A B C D

----------: B

15：The IEEE software maturity index is used to provide a measure of the

A) maintainability of a software product based on its availability

B) relative age of a software product being considered for retirement

C) reliability of a software product following regression testing

D) stability of a software product as it is modified during maintenance

A B C D

----------: D

16：Most technical software metrics described in this chapter represent indirect measures of software attributes that are useful in the quantitative assessment of software quality.

A) True

B) False

A B

----------: A

17：One of the most important attributes for a software product metric is that it should be

A) easy to compute

B) qualitative in nature

C) reliable over time

D) widely applicable

A B C D

----------: A

18：Which of the following is not one of three software product aspects addressed by McCall's software quality factors?

A) ability to undergo change

B) adaptability to new environments

C) operational characteristics

D) production costs and scheduling

A B C D

----------: D

19：

Which measurement activity is missing from the list below?

FormulationCollectionAnalysisInterpretation

A) design

B) feedback

C) measurement

D) quantification

A B C D

----------: B

20：In many cases metrics for one model may be used in later software engineering activities (e.g., design metrics may be used in test planning).

A) True

B) False

A B C D

----------: A

21：Architectural design metrics focus on

A) architectural structure

B) data structural relationships

C) internal module complexity

D) module effectiveness

E) both a and d

A B C D E

----------: E

22：The function point metric is an example of metric that can be used to assist with technical decision-making based on the analysis model information, without making use of historical project data.

A) True

B) False

A B C D

----------: B

23：Component-level metrics include measures of

A) complexity

B) coupling

C) module cohesion

D) performance

E) a, b, and c

A B C D E

----------: E

二、主观题

24：Technical testing metrics fall into two major categories. What are they?

参考答案: Metrics that focus on test coverage and metrics that focus on the duration of the testing process.

25：Describe the role of class-oriented metrics in assessing the quality of an OO system.

参考答案: The class is the fundamental unit of an OO system. The number of methods and their complexity are directly related to the effort required to test a class. The depth of the inheritance tree can be used to estimate the complexity of the class hierarchy. It is important to strive to have low coupling between classes and high cohesion within each class. If large class sizes are detected during OOA review, the classes should partitioned to improve the modularity of the system and make it easier to maintain.

26：List three characteristics of a good software metric.

参考答案: Simple and computable, empirically and intuitively persuasive, consistent use of units and dimensions, programming language independent, provides effective mechanism for quality feedback

27：Component-level design metrics focus on what three internal characteristics of software components?

参考答案: Module cohesion, coupling, and complexity

28：Describe the five activities associated with the software measurement process.

参考答案:

Formulation - derivation of metrics and measures that are appropriate for the software representation being considered

Collection - mechanism used to gather the data used to derive the metrics

Analysis - metric computation and use of mathematical tools

Interpretation - evaluation of metrics results to gain insight into the quality of the software representation

Feedback - recommendations derived from the interpretation are transmitted to the software team

Chapter 16

一、客观题

1：Which test(s) are not performed during WebE construction?

A) configuration

B) navigation

C) reliability

D) usability

A B C D

----------: C

2：WebE are usually delivered to users untested and then debugged as user complaints are registered.

A) True

B) False

A B

----------: B

3：Which of the following technologies is important to Web engineers?

A) component-based development

B) internet standards

C) security

D) all of the above

A B C D

----------: D

4：Which of these application categories are commonly encountered in WebE work?

A) informational

B) transaction-oriented

C) portal

D) all of the above

A B C D

----------: D

5：An evolutionary process model would never be chosen over an agile process model to build a WebApp.

A) True

B) False

A B

----------: B

6：During the analysis/formulation step of the WebE process two types of goals need to be defined

A) applicative goals and aesthetic goals

B) applicative goals and informational goals

C) information goals and performance goals

D) aesthetic goals and performance goals

A B C D

----------: B

7：Since WebApps are fairly standard it is not important for developers to understand the customer\'s business needs and objectives.

A) True

B) False

A B

----------: B

8：Which of the following is not one of the characteristics that we need to take into account when a process framework for WebE is formulated.

A) Changes occur frequently

B) Graphic design expertise is hard to acquire

C) Timelines are short

D) WebApps are delivered incrementally

A B C D

----------: B

9：WebApps must be developed and deployed quickly, making the application of software engineering processes impossible.

A) True

B) False

A B

----------: B

10：Which process model best describes WebE?

A) Linear model

B) Incremental model

C) Formal model

D) all of the above

A B C D

----------: B

11：Since WebApps are usually developed using agile processes, modeling can safely be ignored or skipped altogether.

A) True

B) False

A B

----------: B

12：Scenario-based approaches to describing user interaction are good to use in WebE.

A) True

B) False

A B

----------: A

13：With extremely short time-lines it is impossible to develop plans for WebApp development projects.

A) True

B) False

A B

----------: B

14：Which of the following is not a characteristic of a WebApp?

A) content driven

B) continuously evolving

C) easily measurable

D) network intensive

A B C D

----------: C

15：The mechanics of software engineering analysis, design, and testing must be adapted to accommodate the special characteristics of WebApps.

A) True

B) False

A B

----------: A

16：Because the class is the dominant unit in OO systems, there is no call for the definition of class-oriented metrics.

A) True

B) False

A B C D

----------: B

17：Which activities are conducted during the WebE modeling process?

A) content analysis

B) refine user tasks

C) design architecture

D) all of the above

A B C D

----------: D

二、主观题

18：Describe characteristics of WebApps that must be taken into account by any WebE process model?

参考答案:

- WebApps are often delivered incrementally
- Changes occur frequently
- Delivery timelines are short

19：List 3 characteristics of Web applications.

参考答案:

- Network intensive
- High concurrency
- Unpredictable user loads
- Performance (fast delivery)
- High availability
- Data driven
- Content sensitive
- Continuous evolution
- Immediacy
- Security
- Aesthetics

20：List 3 “best practices” that should be applied to build quality WebApps.

参考答案: 1. Take time to understand the business and product needs of the WebApp

2. Describe how users will interact with the WebApp using a scenario-based approach

3. Develop a brief project plan

4. Spend some time modeling what you plan to build

5. Review models for consistency and quality

6. Use tools and technologies that system construction with reusable components

7. Don’t rely on users to debug the WebApp, design tests and execute them before releasing the system

21：Describe the framework activities for a WebE (Web Engineering) process model, emphasizing WebApp-specific actions that should occur within each activity.

参考答案: • Customer communication (analysis/formulation) - setting the goals, objectives and scope of the first increment

• Planning - fine grained estimates and schedule for the first increment, coarser estimates for subsequent increments

• Modeling - establishes requirements and identifies content items, content design, architectural design, navigational design, and interface design

• Construction - page generation and testing, merging of content and technical designs to produce executable web pages that are exercised to uncover errors

• Deliver and evaluation - increment is reviewed and changes required by customer are integrated into the next increment

Chapter 17

一、客观题

1：Which of these is not a category for WebE effort metrics?

A) application authoring

B) media authoring

C) page authoring

D) scenario authoring

A B C D

----------: D

2：Which of these roles is not usually assigned to members of the WebE team?

A) content developer

B) marketing specialist

C) Web master

D) Web publisher

A B C D

----------: B

3：Which of these is not one of the formulation questions asked during Web engineering?

A) What are the objectives for the WebApp?

B) What is the business need for the WebApp?

C) Who will use the WebApp?

D) Will you need to outsource development of the WebApp?

A B C D

----------: D

4：Any team of experienced software engineers can develop WebApps.

A) True

B) False

A B

----------: B

5：Developing WebApps in-house is no different than developing any other piece of software.

A) True

B) False

A B

----------: B

6：During requirements gathering Web engineers should attempt to define the smallest reasonable number of user classes.

A) True

B) False

A B

----------: A

7：WebApps involve so little programming that formal testing is not needed before releasing the product to the users.

A) True

B) False

A B

----------: B

8：Once formulation is complete Web engineering

A) is complete.

B) may be performed in-house.

C) may be outsourced.

D) both b or c

A B C D

----------: D

9：Which type of analysis is not conducted during the WebE process?

A) content analysis

B) functional analysis

C) user interaction analysis

D) market analysis

A B C D

----------: D

10：Business people lag considerably behind Web engineers in developing, collecting, and using metrics for WebApps.

A) True

B) False
A B

----------: B
11：Which of these is not a goal for using metrics in WebE?
A) to provide basis for effort estimation
B) to provide basis for making personnel decisions
C) to provide indication of business success
D) to provide indication of technical quality
A B C D

----------: B
12：Formulation and requirements gathering are distinct and different processes during WebE.
A) True
B) False
A B

----------: B
13：WebApps are extremely volatile, but this does not eliminate the need to understand the WebApp requirements.
A) True
B) False
A B

----------: A
14：WebApps need to be built with such urgency that planning is not possible.
A) True
B) False
A B

----------: B
15：In building a WebE team strong team leadership is essential.
A) True
B) False
A B

----------: A
16：Outsourcing WebApps is common practice, it is important to perform thorough analysis of the application and even create a rough design internally before selecting a vendor.
A) True
B) False
A B

----------: A

17：Which of these are goals for WebE requirements gathering?

A) Define user interaction scenarios

B) Determine performance constraints

C) Identify content requirements

D) Identify WebApp development tools

E) a, b, and c

A B C D E

----------: E

18：One of the things that distinguish the development of WebApps from other software products is the need to combine the work products from both technical and non-technical tasks into a single product.

A) True

B) False

A B

----------: A

二、主观题

19：What types of analysis are conducted during the WebE process?

参考答案: Content analysis, interaction analysis, functional analysis, configuration analysis

20：List the roles that need to be distributed among the WebE team members.

参考答案:

- Content developers and providers
- Web publisher
- Web engineer
- Business domain experts
- Support specialist
- Administrator (web master)

21：Describe the two basic options for performing Web Engineering once formulation is completed.

参考答案:

Outsourcing – performed by third party vendor who has the expertise, talent, and resources that may be lacking in the business

In-house – performed by Web engineers employed by the business

22：Describe the primary goals for using metrics in the context of Web engineering.

参考答案: • Provide an indication of WebApp technical quality
• Provide a basis for effort estimation
• Provide an indication of the business success of the WebApp

Chapter 18
一、客观题
1：Which is not one of the analysis activities that is used to create a complete analysis model?
A) Configuration analysis
B) Content analysis
C) Functional analysis
D) Data analysis
A B C D

----------: D
2：The content model contains dynamic elements that encompass the WebApp content objects.
A) True
B) False
A B

----------: B
3：Which of the following is not one of the WebApp requirements analysis tasks?
A) Analysis modeling
B) Formulation
C) Requirements gathering
D) User interface prototyping
A B C D

----------: D
4：UML activity diagrams can be used to represent the user observable functionality delivered by the WebApp as well as the operations contained in each analysis class.
A) True
B) False
A B

----------: A
5：The construction details indicating how the user will invoke an operation are deferred until the WebApp design phase.
A) True
B) False
A B

----------: A
6：Once the WebApp architecture is modeled the Web engineer must consider requirements that

dictate how users will navigate from one content element to another.

A) True

B) False

A B

----------: B

7：A user interface prototype should not be created during WebApp analysis because doing so involves programming.

A) True

B) False

A B

----------: B

8：As use-cases are organized into functional packages, each functional package is assessed to ensure that it is

A) Comprehensive

B) Highly cohesive

C) Loosely coupled

D) All of the above

A B C D

----------: D

9：What are the most useful UML diagrams and related information that can be used to represent a WebApp interaction model?

A) activity diagrams, class diagrams, state diagrams, interface prototype

B) activity diagrams, collaboration diagrams, sequence diagrams, state diagrams

C) use-cases, sequence diagrams, state diagrams, interface prototype

D) use-cases, sequence diagrams, state diagrams, sequence diagrams

A B C D

----------: C

10：The answers to the relationship analysis questions help the Web engineer position a content element within the WebApp.

A) True

B) False

A B

----------: A

11：In building a content hierarchy is sufficient to examine a list of content objects and a brief description of each object.

A) True

B) False

A B

----------: B

12：Configuration analysis focuses on the architecture of the user\'s Web browsing environment.

A) True

B) False

A B

----------: B

13：User hierarchies are used to replace UML user representations for WebApps having large numbers of user categories?

A) True

B) False

A B

----------: B

14：By examining each use-case and building a class model for 1 or 2 representative users it is possible to derive the needed analysis classes.

A) True

B) False

A B

----------: B

15：Which of these are not steps of relationship-navigation analysis?

A) Element analysis

B) Evaluation analysis

C) Functional analysis

D) Stakeholder analysis

A B C D

----------: C

16：Content objects are extracted from use cases by examining the scenarios description for direct or indirect content references.

A) True

B) False

A B

----------: A

17：UML deployment diagrams can be used to create the configuration model for a complex WebApp.

A) True

B) False

A B

----------: A

18：Dynamic elements of WebApp analysis models describe how users interaction with the system.

A) True

B) False

A B

----------: B

19：WebApp use-cases might be described as bundles of functionality.

A) True

B) False

A B

----------: B

二、主观题

20：Describe the major tasks to be completed during WebApp requirements analysis?

参考答案: • Formulation I(dentify goal and objectives for WebApp,
define categories of users, and create user hierarchy)

• Requirements Gathering (communication between WebE team and stakeholders intensifies, content and functional requirements are listed, and interaction scenarios (use-cases) are developed)

• Analysis modeling (content modeling, interaction modeling, functional modeling, configuration modeling)

21：List the types of analysis used in the Relationship-Navigation Analysis.

参考答案: • Stakeholder analysis

• Element analysis

• Relationship analysis

• Navigation analysis

• Evaluation analysis

22：Describe the contents of the WebApp content, functional, interaction, and configuration models.

参考答案: • Content model - structural elements that represent WebApp content requirements (UML class diagrams)

• Functional model - user observable behavior delivered to end-users and operations contained in analysis classes to implement class behaviors (UML activity diagrams)

• Interaction model – indicates how users make use of the WebApp content and functionality (use-cases, UML sequence diagrams, state diagrams, user interface prototype)

• Configuration model - may be a list of server-side and client-side attributes required for the WebApp (UML deployment diagrams)

23：Describe the differences between WebApp structural elements and dynamic elements?

参考答案: • Structural elements – identify classes and content object required to create a WebApp that meets stakeholders needs

• Dynamic elements – describe how structural elements interact with one another and how they interact with end-users

Chapter 19

一、客观题

1：Which of the following are not part of the design pyramid for WebE design?

A) Architectural design

B) Business case design

C) Content design

D) Navigation design

A B C D

----------: B

2：Which of the following are design goals for every WebApp?

A) Simplicity

B) Consistency

C) Navigability

D) Visual appeal

E) all of the above

A B C D E

----------: E

3：Which of the following characteristics should not be used to assess the quality of a WebApp?

A) aesthetics

B) reliability

C) maintainability

D) usability

A B C D

----------: A

4：Which of these is not one of the design activities associated with object-oriented hypermedia design?

A) abstract interface design

B) conceptual design

C) content design

D) navigational design

A B C D

----------: C

5：Graphic design considers every aspect of the look and feel of a WebApp.

A) True

B) False

A B

----------: A

6：Which of these are WebApp interaction mechanisms?

A) Graphic icons

B) Graphic images

C) Navigation menus

D) All of the above

A B C D

----------: D

7：Every WebApp user interface should be easy to use, easy to navigate, error-free and functional.

A) True

B) False

A B

----------: A

8：Which of the following is not one of the content architectural structures used by web engineers?

A) linear

B) grid

C) hierarchical

D) parallel

A B C D

----------: D

9：Content objects have both information attributes defined during analysis and implementation specific attributes specified during design.

A) True

B) False

A B

----------: A

10：Which of the following is a navigation pattern used during web-based design?

A) cycle

B) counterpoint

C) sieve

D) all of the above

A B C D

----------: D

11：Content design is conducted by

A) Copywriters and graphic designer

B) Web engineers

C) both a and b

D) none of the above

A B C D

----------: C

12：Web navigational design involves creating a semantic navigational unit for each goal associated with each defined user role.

A) True

B) False

A B

----------: A

13：MVC is a three layer architecture that contains a

A) machine, view, content objects

B) model, view, and content objects

C) model, view, and controller

D) machine, view, controller

A B C D

----------: C

14：Component level design for WebApps is very similar to component level design for other software delivery environments.

A) True

B) False

A B

----------: A

15：Content objects are not normally chunked into Web pages until the implementation activities begin.

A) True

B) False

A B

----------: B

16：

Content architecture and WebApp architecture are pretty much the same thing for many WebApps?

A) True

B) False

A B

----------: B

17：Which of the following is not one of the browsing primitives normally found in WebApp interfaces.

A) Conditional browsing

B) Nested browsing

C) Recursive browsing

D) Sequential browsing

A B C D

----------: C

18：UML does not have any representation schemas that are useful in building WebApp design models.

A) True

B) False

A B

----------: B

19：To allow the user to feel in control of a WebApp, it is a good idea to mix both horizontal and vertical navigation mechanisms on the same page.

A) True

B) False

A B

----------: B

20：With WebApps content is everything, a poorly defined user interface will be quickly overlooked by frequent users.

A) True

B) False

A B

----------: B

21：Most WebApps can be easily characterized by judicious use of widely recognized suites of software metrics?

A) True

B) False

A B

----------: B

22：Screen layout design has several widely accepted standards based on human factors research.

A) True

B) False

A B

----------: B

二、主观题

23：What are the 6 activities in the Web engineering design pyramid?

参考答案: Interface design, aesthetic design, content design, navigation design, architecture design, and component design

24：What are the major attributes should be used to assess the quality of a WebApp?

参考答案: Usability, functionality, reliability, efficiency, maintainability

25：What are the primary design objectives of a WebApp interface?

参考答案: • Establish a consistent window into the content and functionality provided by the interface

- Guide the user through a series of interactions with the WebApp
- Organize the navigation option and content available to the user

26：List four content architectures find in WebApps?

参考答案:

- Linear structures
- Grid structures
- Hierarchical structures
- Networked or pure web structures

Chapter 20

一、客观题

1：Which of the following is not a WebApp interface mechanism?

A) Browser

B) Cookies

C) Forms

D) Links

A B C D

----------: A

2：Usability tests should be designed and executed by intended users for a given WebApp.

A) True

B) False

A B

----------: B

3：The purpose of WebApp navigation syntactic testing is to ensure the correct appearance of each navigation mechanism.

A) True

B) False

A B

----------: B

4：The overall strategy for interface testing is to uncover errors

A) in navigation semantics

B) in overall usabililty

C) related to specific interface mechanisms

D) both a and c

A B C D

----------: D

5：WebApp stress testing is a continuation load testing.

A) True

B) False

A B

----------: A

6：Which of the following is not one of the dimensions of quality used to assess a WebApp.

A) Content

B) Maintainability

C) Navigability

D) Usability

A B C D

----------: B

7：Which test case design technique(s) are appropriate for WebApp component-level testing?

A) Boundary value analysis

B) Equivalence partitioning

C) Path testing

D) All of the above

A B C D

----------: D

8：To design client-side configuration tests each user category is assessed to reduce the number of configuration variables to a manageable number.

A) True

B) False

A B

----------: A

9：Both Web engineers and non-technical users conduct navigation semantics testing for WebApps.

A) True

B) False

A B

----------: A

10：As the WebApp architecture is constructed which types of testing are used as integration tests?

A) Component testing

B) Content testing

C) Navigation testing

D) Usability testing

E) both a and c

A B C D E

----------: E

11：Which of the following is not one of the objectives of WebApp content testing?

A) Find organizational or structure errors

B) Identify linking errors

C) Uncover semantic errors

D) Uncover syntactic errors

A B C D

----------: B

12：WebApp performance tests are designed to

A) assess WebApp usability

B) evaluate page loading times

C) simulate real-world loading situations

D) test network connectivity

A B C D

----------: C

13：Since WebApps evolve continuously, the testing process is an on-going activity, conducted by the Web support staff using regression tests.

A) True

B) False

A B

----------: A

14：Since content is central to users of WebApps testing is less important than for conventional software products.

A) True

B) False

A B

----------: B

15：Which of following is not one of the elements that needs to be considered when constructing WebApp server-side configuration tests?

A) Browser compatibility

B) Database software integration

C) Operating system compatibility

D) System security measures

A B C D

----------: A

16：Which of the following is not a testable WebApp security element.

A) Authentication

B) Encryption

C) Firewalls

D) Penetration

A B C D

----------: D

17：Load testing involves determining the input of which 3 variables?

A) N, T, D

B) N, T, P

C) T, D, P

D) N, D, P

A B C D

----------: A

18：WebApps require special testing methodologies because WebApp errors have several unique characteristics.

A) True

B) False

A B

----------: A

19：When testing WebApp interface semantics, each use-case is used as input for the design of a testing sequence.

A) True

B) False

A B

----------: A

20：Database testing is very rarely a part of WebApp content testing.

A) True
B) False
A B

----------: B
21：Test planning is not used in WebApp testing.
A) True
B) False
A B

----------: B
22：WebApp compatibility testing is conducted to be sure that the user model for usage scenario matched the user category assigned to a given user.
A) True
B) False
A B

----------: B
二、主观题
23：Describe the WebApp interface testing strategy.

参考答案: • Interface features are tested to ensure that design rules, aesthetics, and related visual content is available for user without error.
• Individual interface mechanisms are tested using unit testing strategies.
• Each interface mechanism is tested in the context of a use-case of navigation semantic unit (e.g. thread) for a specific user category
• Complete interface is tested against selected use-cases and navigation semantic unit to uncover interface semantic errors
• Interface is tested in a variety of environments to ensure compatibility
24：What is the difference between load testing and stress testing?

参考答案: Load testing attempts to determine how the WebApp and its server-side environments respond to various load conditions. Stress testing is a continuation of load testing that seeks to have the number of user, transactions, and data load meet and exceed operational limits.
25：Summarize the steps used in a WebApp testing strategy..

参考答案: • WebApp content model is reviewed to uncover errors.
• Interface model is reviewed to ensure all use-cases are accommodated.
• Design model for WebApp is reviewed to uncover navigation errors.
• User interface is tested to uncover presentation errors and/or navigation mechanics problems.

• Selected functional components are unit tested.
• Navigation throughout the architecture is tested.
• WebApp is implemented in a variety of different environmental configurations and the compatibility of WebApp with each is assessed.
• Security tests are conducted.
• Performance tests are conducted.
• WebApp is tested by a controlled and monitored group of end-users (looking for content errors, navigation errors, usability concerns, compatibility issues, reliability, and performance).
26：What are the objectives for content testing?

参考答案: • Uncover syntactic errors in all media (e.g. typos)
• Uncover semantic errors (e.g. errors in completeness or accuracy)
• Find errors in organization or structure of content presented to end-user

Chapter 21
一、客观题
1：Effective software project management focuses on four P's which are
A) people, performance, payoff, product
B) people, product, performance, process
C) people, product, process, project
D) people, process, payoff, product
A B C D

----------: C
2：The major areas of problem decomposition during the project scoping activity are the
A) customer workflow
B) functionality to be delivered
C) process used to deliver functionality
D) software process model
E) both b and c
A B C D E

----------: E
3：When can selected common process framework activities be omitted during process decomposition?
A) when the project is extremely small in size
B) any time the software is mission critical
C) rapid prototyping does not require their use
D) never—the activities should always occur
A B C D

----------: D

4：Project management is less important for modern software development since most projects are successful and completed on time.

A) True

B) False

A B

----------: B

5：How does a software project manager need to act to minimize the risk of software failure?

A) double the project team size

B) request a large budget

C) start on the right foot

D) track progress

E) both c and d

A B C D E

----------: E

6：Process framework activities are populated with

A) milestones

B) work products

C) QA points

D) All of the above

A B C D

----------: D

7：Which of these are critical practices for performance-based project management?

A) assessing product usability

B) defect tracking against quality targets

C) empirical cost estimation

D) formal risk management

E) b, c, and d

A B C D E

----------: E

8：The best person to hire as a project team leader is the most competent software engineering practitioner available.

A) True

B) False

A B

----------: B

9：The best project team organizational model to use when tackling extremely complex problems is the

A) closed paradigm

B) open paradigm
C) random paradigm
D) synchronous paradigm
A B C D

----------: B
10：Which of the following is not generally considered a player in the software process?
A) customers
B) end-users
C) project managers
D) sales people
A B C D

----------: D
11：Which of these software characteristics is not a factor contributing to project coordination difficulties?
A) interoperability
B) performance
C) scale
D) uncertainty
A B C D

----------: B
12：Product and process decomposition often occurs simultaneously as the project plan evolves.
A) True
B) False
A B

----------: A
13：The W5HH principle contains which of the following questions?
A) Why is the system being developed?
B) What will be done by whom?
C) Where are they organizationally located?
D) How much of each resource is required?
E) a, c, and d
A B C D E

----------: E
14：One of the best ways to avoid frustration during the software development process is to
A) give team members more control over process and technical decisions.
B) give team members less control over process and technical decisions.
C) hide bad news from the project team members until things improve.
D) reward programmers based on their productivity.
A B C D

----------: A

15：The first step in project planning is to

A) determine the budget.

B) select a team organizational model.

C) determine the project constraints.

D) establish the objectives and scope.

A B C D

----------: D

16：Which of these software characteristics are used to determine the scope of a software project?

A) context, lines of code, function

B) context, function, communication requirements

C) information objectives, function, performance

D) communications requirements, performance, information objectives

A B C D

----------: C

17：Which factors should be considered in choosing the organizational structure for a software team? (Select all that apply)

A) degree of communication desired

B) predicted size of the resulting program

C) rigidity of the delivery date

D) size of the project budget

E) a, b, and c

A B C D E

----------: E

18：Small agile teams have no place in modern software development.

A) True

B) False

A B

----------: B

19：Organizations that achieve high levels of maturity in people management have a higher likelihood of implementing effective software engineering processes.

A) True

B) False

A B

----------: A

二、主观题

20：What are the four P's of effective project management?

参考答案: people, product, process, and project

21：How is software scope defined?

参考答案:

项目环境。要开发的软件如何适应于大型的系统、产品或业务环境，该环境下要施加什么约束？

信息目标。软件要产生哪些客户可见的数据对象（第8章）来作为输出？需要什么数据对象作为输入？

功能和性能。软件要执行什么功能才能将输入数据变换成输出数据？软件需要满足什么特殊的性能要求吗？

22：List 4 of the 6 critical software practices required by performance-based management.

参考答案:

①. formal risk management

②. empirical cost and schedule estimation

③. metric-based project management

④. earned value tracking

⑤. defect tracking against quality targets

⑥. people-aware program management

> 关键实践[8]包括：基于度量的项目管理（第22章），经验成本和进度估计（第23和24章），获得价值跟踪（第24章），正式的风险管理（第25章），根据质量目标跟踪缺陷（第26章），人员计划管理（第21.2节）。每一个关键实践都贯穿于本书的第四部分。

23：What steps can be taken to avoid many of the problems that cause software projects to fail?

参考答案:

①. 在正确的基础上开始工作

②. 保持动力

③. 跟踪进展

④. 做出聪明的决策

⑤. 进行事后分析

Chapter 22

一、客观题

1：Which of following are advantages of using LOC (lines of code) as a size-oriented metric?

A) LOC is easily computed.

B) LOC is a language dependent measure.

C) LOC is a language independent measure.

D) LOC can be computed before a design is completed.

A B C D

----------: A

2：There is no need to reconcile LOC and FP measures since each is meaningful in its own right as a project measure.

A) True

B) False

A B C D

----------: B

3：Which of the following provide useful measures of software quality?

A) correctness, business relevance, integrity, usability

B) reliability, maintainability, integrity, sales

C) correctness, maintainability, size, satisfaction

D) correctness, maintainability, integrity, usability

A B C D

----------:

4：Baseline data must be collected in an on-going manner and cannot be computed by formal study of historical project data.

A) True

B) False

A B

----------:

5：The terms measure, measurement, and metric all share the same definition according to the IEEE Standard Glossary of Software Engineering Terms.

A) True

B) False

A B

----------: B

6：Why is it important to measure the process of software engineering and software it produces?

A) It is really not necessary unless the project is extremely complex.

B) To determine costs and allow a profit margin to be set.

C) To determine whether a software group is improving or not.

D) To make software engineering more like other engineering processes.

A B C D

----------: C

7：Process indicators enable a software project manager to

A) assess the status of an on-going project

B) track potential risks

C) adjust work flow or tasks

D) all of the above

A B C D

----------: D

8：Small software organizations are not likely to see any economic return from establishing software metrics program.

A) True

B) False

A B

----------: B

9：To be an effective aid in process improvement the baseline data used must be:

A) based on reasonable guestimates from past projects

B) measured consistently across projects

C) drawn from similar projects

D) based only on successful projects

E) both b and c

A B C D E

----------: E

10：Use-case oriented metrics are computed directly from UML diagrams and they are often used as normalization measures.

A) True

B) False

A B

----------: B

11：Software quality and functionality must be measured indirectly.

A) True

B) False

A B

----------: A

12：Object-oriented project measures may be combined with historical project data to provide metrics that aid in project estimation.

A) True

B) False

A B C D

----------: A

13：Which of the following are advantages of using function points (FP) as a measure of the functionality delivered by a software application?

A) FP is easily computed.

B) FP is a language dependent measure.

C) FP is a language independent measure.

D) FP can be computed before a design is completed.

E) both c and d

A B C D E

----------: E

14：The software metrics chosen by an organization are driven by the business or technical goals an organization wishes to accomplish.

A) True

B) False

A B

----------: A

15：A software quality metric that can be used at both the process and project levels is defect removal efficiency (DRE).

A) True

B) False

A B

----------: A

16：Which of the following items are not measured by software project metrics?

A) inputs

B) markets

C) outputs

D) results

A B C D

----------: B

17：Which of the following is not a measure that can be collected from a Web application project?

A) Customization index

B) Number of dynamic objects

C) Number of internal page links

D) Number of static web pages

A B C D

----------: A

18：Which of these are valid reasons for measuring software processes, products, and resources?

A) to characterize them

B) to evaluate them

C) to price them

D) to improve them

E) a, b, and d

A B C D E

----------: E

19：Which of the following software quality factors is most likely to be affected by radical changes to computing architectures?

A) operation

B) transition

C) revision

D) none of the above

A B C D

----------: D

20：Public metrics are used

A) to evaluate the performance of software development teams.

B) to appraise the performance of individual team members.

C) to make strategic changes to the software process.

D) to make tactical changes during a software project

E) both c and d

A B C D E

----------: E

二、主观题

21：How do software process metrics differ from software project metrics?

参考答案: Process metrics are used to make strategic decisions about how to complete (and ultimately, improve) common process framework activities while project metrics are used to monitor progress during a software development project and to control product quality.

22：Explain how size-oriented metrics differ from function-oriented metrics. Discuss the pros and cons of each.

参考答案: Size-oriented measures are computed by normalizing direct measures of the software engineering process (e.g. effort or defects) over the product size, measured in lines of code. Function-oriented measures are indirect measures that are computed from measures of the information domain of a business application and an assessment of its complexity. Size-oriented metrics are relatively easy to collect, but can present problems when component-based or visual programming methods are applied. Function-oriented metrics can be determined much earlier in the software cycle, but are an abstraction that is open to interpretation.

23：What are the goals for using object-oriented software metrics?

参考答案: • To better understand product quality

• To assess effectiveness of the process

• To improve the quality of work performed at the project level

24：What are four useful indicators of software quality that should have measures defined and

monitored by the software project team?

参考答案: correctness, maintainability, integrity, usability

25：Why is it important for software developers to make use of measurement to guide their work?

参考答案: Developers need to measure so that they can tell whether they are improving or not. Without measurements this is extremely difficult to achieve. Measurement can also provide an indication of product quality and the effectiveness of the project team.

Chapter 23

一、客观题

1：Software feasibility is based on which of the following

A) business and marketing concerns
B) scope, constraints, market
C) technology, finance, time, resources
D) technical prowess of the developers

A B C D

----------: C

2：Problem-based estimation is based on problem decomposition which focuses on

A) information domain values
B) project schedule
C) software functions
D) process activities
E) both a and c

A B C D E

----------: E

3：Since project estimates are not completely reliable, they can be ignored once a software development project begins.

A) True
B) False

A B

----------: B

4：Software project estimation techniques can be broadly classified under which of the following headings?

A) automated processes
B) decomposition techniques
C) empirical models
D) regression models

E) both b and c

A B C D E

----------: E

5：The number of people required for a software project is determined

A) after an estimate of the development effort is made.

B) by the size of the project budget.

C) from an assessment of the technical complexity of the system.

D) all of the above

A B C D

----------: A

6：COCOMO II is an example of a suite of modern empirical estimation models that require sizing information expressed as:

A) function points

B) lines of code

C) object points

D) any of the above

A B C D

----------: D

7：It is possible to use a modified function point technique to develop estimates for Web applications.

A) True

B) False

A B

----------: A

8：Using a statistical technique like decision tree analysis can provide some assistance in sorting out the true costs associated with the make-buy decision.

A) True

B) False

A B

----------: A

9：FP-based estimation techniques require problem decomposition based on

A) information domain values

B) project schedule

C) software functions

D) process activities

A B C D

----------: A

10：Unlike a LOC or function point each person\'s "use-case" is exactly the same size.

A) True
B) False
A B

----------: B
11：Empirical estimation models are typically based on
A) expert judgement based on past project experiences
B) refinement of expected value estimation
C) regression models derived from historical project data
D) trial and error determination of the parameters and coefficients
A B C D

----------: C
12：The size estimate for a software product to be built must be based on a direct measure like LOC.
A) True
B) False
A B

----------: B
13：The software engineering environment (SEE) consists of which of the following?
A) customers
B) developers
C) hardware platforms
D) software tools
E) both c and d
A B C D E

----------: E
14：Outsourcing always provides a simple means of acquiring software at lower cost than onsite development of the same product.
A) True
B) False

A B

----------: B
15：Reusable software components must be
A) catalogued for easy reference.
B) standardized for easy application.
C) validated for easy integration.
D) all of the above.
A B C D

----------: D

16：In agile software development estimation techniques focus on the time required to complete each

A) increment

B) function

C) task

D) all of the above

A B C D

----------: A

17：Process-based estimation techniques require problem decomposition based on

A) information domain values

B) project schedule

C) software functions

D) process activities, actions and/or tasks

E) both c and d

A B C D E

----------: E

18：When agreement between estimates is poor the cause may often be traced to inadequately defined project scope or inappropriate productivity data.

A) True

B) False

A B

----------: A

19：Project scope is defined as a means of bounding the system so that cost and schedule can be estimated effectively.

A) True

B) False

A B

----------: A

20：Putnam\'s software equation is a dynamic empirical model that has two independent parameters: a size estimate and an indication of project duration in calendar months or years.

A) True

B) False

A B

----------: A

21：The hardware required for most computer-based systems is more costly to purchase than the software.

A) True

B) False

A B

----------: B

22：The objective of software project planing is to

A) convince the customer that a project is feasible.

B) make use of historical project data.

C) enable a manager to make reasonable estimates of cost and schedule.

D) determine the probable profit margin prior to bidding on a proje

A B C D

----------: C

23：LOC-based estimation techniques require problem decomposition based on

A) information domain values

B) project schedule

C) software functions

D) process activities

A B C D

----------: C

24：The only reason an estimate may be unreliable is lack of experience with the application on the part of the estimator.

A) True

B) False

A B

----------: B

25：Function points are of no use in developing estimates for object-oriented software.

A) True

B) False

A B

----------: B

二、主观题

26：Why is a feasibility assessment part of the planning process?

参考答案: If a project is not technically possible, there is no point in trying to build it. But technical feasibility is not the whole story. The project must also fulfill a business need to avoid building a high tech product that does not have any customers.

27：What resources are typically included in the project estimation process?

参考答案: Human resources (number of people and skills needed)

Reusable software resources (off-the-shelf components, work products from past projects, new

components that must be built)
Environmental resources (availability and scheduling needed development hardware and software).
28：Why is the "make-buy" decision and deciding whether or not to outsource software development an important part of the software planning process?

参考答案: It maybe more cost effective to acquire a piece of software, rather than develop it. Similarly, deciding to outsource software development frees resources for other purposes (or reduces expenses) but it makes outsourcing can make it harder to control and manage delivery times and development costs.
29：What is the objective of project planning?

参考答案: To provide managers with a framework to make reasonable estimates of the resources and time required for building a software product.

Chapter 24
一、客观题
1：Which of the following is not one of the guiding principles of software project scheduling:
A) compartmentalization
B) market assessment
C) time allocation
D) effort validation
A B C D

----------: B
2：Two tools for computing critical path and project completion times from activity networks are
A) CPM
B) DRE
C) FP
D) PERT
E) both a and d
A B C D E

----------: E
3：The 40-20-40 rule suggests that the least amount of development effort be spent on
A) estimation and planning
B) analysis and design
C) coding
D) testing
A B C D

----------: C

4：Tasks that lie on the critical path in a task network may be completed in any order as long as the project is on schedule.

A) True

B) False

A B

----------: B

5：Timeline charts assist project managers in determining what tasks will be conducted at a given point in time.

A) True

B) False

A B

----------: A

6：Since iterative process models work best for object-oriented projects, it is impossible to determine whether an increment will be completed on time or not.

A) True

B) False

A B

----------: B

7：Earned value analysis is a technique that allows managers to take corrective action before a project crisis develops.

A) True

B) False

A B

----------: A

8：Doubling the size of your software project team is guaranteed to cut project completion time in half.

A) True

B) False

A B

----------: B

9：The best indicator of progress on a software project is the completion

A) of a defined engineering activity task

B) of a successful budget review meeting on time

C) and successful review of a defined software work product

D) and successful acceptance of project prototype by the customer

A B C D

----------: C

10：A task set is a collection of

A) engineering work tasks, milestones, work products

B) task assignments, cost estimates, metrics

C) milestones, deliverables, metrics

D) responsibilities, milestones, documents

A B C D

----------: A

11：Software projects are inevitably late and there is nothing that can explain why.

A) True

B) False

A B

----------: B

12：For purposes of determining the major engineering tasks and distributing them on the project time line, the project manger should assume that the process model used is

A) linear

B) sequential

C) iterative evolutionary

D) any of the above

A B C D

----------: D

13：The software equation can be used to show that by extending the project deadline slightly

A) fewer people are required

B) you are guaranteed to meet the deadline

C) more lines of code can be produced

D) none of the above

A B C D

----------: A

14：It is unethical to undertake a project that you know in advance cannot be completed by the customer\'s deadline, unless you inform the customer of the risk and establish a project plan that can deliver the needed system incrementally.

A) True

B) False

A B

----------: A

15：The only means accomplishing task refinement is to make use of a process design language approach.

A) True

B) False

A B

----------: B

16：The purpose of earned value analysis is to

A) determine how to compensate developers based on their productivity

B) provide a quantitative means of assessing software project progress

C) provide a qualitative means of assessing software project progress

D) set the price point for a software product based on development effort

A B C D

----------: B

17：The task (activity) network is a useful mechanism for

A) computing the overall effort estimate

B) detecting intertask dependencies

C) determining the critical path

D) specifying the task set to the customer

E) both b and c

A B C D E

----------: E

二、主观题

18：Approximately what percent of the project time line should be devoted to each of the activities listed below?

参考答案:

Planning _____

Analysis _____

Design _____

Coding _____

Testing _____

If you could expend more time in one activity, which would have the highest likelihood of improving software quality? Why?

Answer (Section 24.2):

Planning 2-3%

Analysis 10-25%

Design 20-25%

Coding 15-20%

Testing 30-40%

Expend more time in design because design is the place where quality is built into a product.

19：In software project scheduling work, what is a task (or activity) network?

参考答案: A graphic representation depicting software engineering task dependencies and the workflow for a project.

20：What is "time-boxing" as it relates to project scheduling?

参考答案: Time-boxing is the practice of deciding a priori the fixed amount of time that can be spent on each project task. When the task limit is exceeded, development moves on to the next task.

21：List 3 principles for scheduling software projects.

参考答案: Compartmentalization, interdependency, time allocation, effort validation, defined responsibilities, defined outcomes, defined milestones

Chapter 25

一、客观题

1：An effective risk management plan will need to address which of the following issues?

A) risk avoidance

B) risk monitoring

C) contingency planning

D) all of the above

A B C D

----------: D

2：Hazard analysis focuses on the identification and assessment of potential hazards that can cause

A) project termination

B) schedule slippage

C) external problems

D) entire system to fail

A B C D

----------: C

3：Risk monitoring involves watching the risk indicators defined for the project and not determining the effectiveness of the risk mitigation steps themselves.

A) True

B) False

A B

----------: B

4：Which factors affect the probable consequences likely if a risk does occur?

A) risk cost
B) risk timing
C) risk scope
D) risk resources
E) both b and c
A B C D E

----------: E

5：The reason for refining risks is to break them into smaller units having different consequences.
A) True
B) False
A B

----------: B

6：Software risk always involves two characteristics
A) fire fighting and crisis management
B) known and unknown risks
C) uncertainty and loss
D) staffing and budget
A B C D

----------: C

7：Generic risks require far more attention than product-specific risks.
A) True
B) False
A B

----------: B

8：
Risk information sheets (RIS) are never an acceptable substitute for a full risk mitigation, monitoring, and management (RMMM) plan.
A) True
B) False

A B

----------: B

9：Individual team members can make their own estimate for a risk probability and then develop a consensus value.
A) True
B) False

A B

----------: A

10：Software risk impact assessment should focus on consequences affecting

A) planning, resources, cost, schedule

B) marketability, cost, personnel

C) business, technology, process

D) performance, support, cost, schedule

A B C D

----------: D

11：Risk projection attempts to rate each risk in two ways

A) likelihood and size

B) likelihood and probability

C) likelihood and impact

D) likelihood and mitigation

A B C D

----------: C

12：Proactive risk management is sometimes described as fire fighting.

A) True

B) False

A B

----------: B

13：Three major categories of risks are

A) business risks, personnel risks, budget risks

B) project risks, technical risks, business risks

C) planning risks, technical risks, personnel risks

D) management risks, technical risks, design risks

A B C D

----------: B

14：A risk referent level is a risk component value (performance, cost, support, schedule) or combination of values that cause a project to be terminated.

A) True

B) False

A B

----------: A

15：A risk item checklist would contain known and predictable risks from which of these categories?

A) product size

B) development environment

C) staff size
D) process definition
E) all of the above
A B C D E

----------: E
16：Questions that should be asked to assess the overall project risk include:
A) Have top managers formally committed to support the project?
B) Are end-users committed to the project and proposed system being built?
C) Are requirements fully understood by development team and customers?
D) Does the proposed budget have time allocated for marketing?
E) a, b and c
A B C D E

----------: E
17：Risk tables are sorted by
A) probability and cost
B) probability and impact
C) probability and size
D) probability and exposure
A B C D

----------: B
二、主观题
18：How are project risks different from technical risks?

参考答案: Project risks threaten the project plan, if they become real the schedule may slip or the cost will increase. Technical risks threaten the product quality or timeliness, if they become real implementation becomes more difficult or impossible.
19：Describe all activities that must occur in order to produce a Risk Mitigation, Monitoring, and Management Plan.

参考答案: Risk Identification - determine the risks that are appropriate
Risk Projection - determine the likelihood that each risk will occur and the damage likely to occur
Risk Mitigation - figuring out strategies to avoid the risks
Risk Management and Contingency Planning - assuming each risk becomes a reality determine ways to limit their impact
20：List three issues that must be dealt with in an effective strategy for dealing with risk.

参考答案: Risk avoidance, risk monitoring, risk management & contingency planning
21：Describe the process of building a risk table.

参考答案: Project teams begin by listing all risks. Each risk is categorized by type and its probability is estimated. The impact value of each risk is assessed. Risk probability and impact are used to sort the table. Risks are then classified as high impact or low impact by defining a "cutoff" line. High impact risks (those above the line) receive management attention.

Chapter 26

一、客观题

1：In general the earlier a software error is discovered and corrected the less costly to the overall project budget.

A) True

B) False

A B

----------: A

2：Statistical quality assurance involves

A) using sampling in place of exhaustive testing of software

B) surveying customers to find out their opinions about product quality

C) tracing each defect to its underlying cause, isolating the "vital few" causes, and moving to correct them

D) tracing each defect to its underlying causes and using the Pareto principle to correct each problem found

A B C D

----------: C

3：Defect amplification models can be used to illustrate the costs associated with using software from its initial deployment to its retirement.

A) True

B) False

A B

----------: B

4：Variation control in the context of software engineering involves controlling variation in the

A) process applied

B) resources expended

C) product quality attributes

D) all of the above

A B C D

----------: D

5：Which of these activities is not one of the activities recommended to be performed by an independent SQA group?

A) prepare SQA plan for the project

B) review software engineering activities to verify process compliance

C) report any evidence of noncompliance to senior management

D) serve as the sole test team for any software produced

A B C D

----------: D

6：Attempts to apply mathematical proofs to demonstrate that a program conforms to its specifications are doomed to failure.

A) True

B) False

A B

----------: B

7：The ISO quality assurance standard that applies to software engineering is

A) ISO 9000:2004

B) ISO 9001:2000

C) ISO 9002:2001

D) ISO 9003:2004

A B C D

----------: B

8：A review summary report answers which three questions?

A) terminate project, replace producer, request a time extension

B) what defects were found, what caused defects, who was responsible

C) what was reviewed, who reviewed it, what were the findings

D) none of the above

A B C D

----------: C

9：Sample driven reviews only make sense for very small software development projects.

A) True

B) False

A B

----------: B

10：Poka-yoke devices are mechanisms that lead to the

A) creation of quality processes with minimal resources

B) determining causes of software defects

C) prevention of potential quality problems

D) rapid detection of quality problems introduced

E) both c and d

A B C D E

----------: E

11：Which of the following is not a section in the standard for SQA plans recommended by IEEE?

A) budget

B) documentation

C) reviews and audits

D) test

A B C D

----------: A

12：Which of the following are objectives for formal technical reviews?

A) allow senior staff members to correct errors

B) assess programmer productivity

C) determining who introduced an error into a program

D) uncover errors in software work products

A B C D

----------: D

13：There is no need to assess customer satisfaction when trying to determine the quality of a piece of software.

A) True

B) False

A B

----------: B

14：Software safety is a quality assurance activity that focuses on hazards that

A) affect the reliability of a software component

B) may cause an entire system to fail

C) may result from user input errors

D) prevent profitable marketing of the final product

A B C D

----------: B

15：The purpose of software reviews is to uncover errors in work products so they can be removed before moving on to the next phase of development.

A) True

B) False

A B

----------: A

16：People who perform software quality assurance must look at the software from the customer\'s perspective.

A) True

B) False

A B

----------: A

17：Software reliability problems can almost always be traced to

A) errors in accuracy

B) errors in design

C) errors in implementation

D) errors in operation

E) both b and c

A B C D E

----------: E

18：Six Sigma methodology defines three core steps.

A) analyze, improve, control

B) analyze, design, verify

C) define, measure, analyze

D) define, measure, control

A B C D

----------: C

19：A key concept of quality control is that all work products

A) are delivered on time and under budget

B) have complete documentation

C) have measurable specifications for process outputs

D) are thoroughly tested before delivery to the customer

A B C D

----------: C

20：In any type of technical review, the focus of the review is on the product and not the producer.

A) True

B) False

A B

----------: A

21：The goal of quality assurance is to provide management with the data needed to determine which software engineers are producing the most defects.

A) True

B) False

A B

----------: B

22：Software quality might be defined as conformance to explicitly stated requirements and standards, nothing more and nothing less.

A) True

B) False

A B

----------: B

23：Quality costs may be divided into costs associated with

A) prevention, appraisal, and failure

B) people, process, and product

C) customers, developers, and maintenance

D) all of the above

A B C D

----------: A

24：At the end of a formal technical review all attendees can decide to

A) accept the work product without modification

B) modify the work product and continue the review

C) reject the product due to stylistic discrepancies

D) reject the product due to severe errors

E) both a and d

A B C D E

----------: E

二、主观题

25：Explain the difference between "quality of design" and "quality of conformance".

参考答案: Quality of design refers to the characteristics that designers specify for the product being constructed. Quality of conformance is the degree to which the requirements and design specifications are followed during the manufacturing of the product.

26：What is meant by the term “software reliability”?

参考答案: Software reliability is the probability of error free operation of a computer program in a specified environment for a specified time period.

27：What is a poka-yoke device?

参考答案: A mechanism that leads to the prevention of a potential quality problem before it occurs or the rapid detection of a quality problem if one is introduced.

28：What is a formal technical review and why is one conducted? Outline the steps required to conduct a successful FTR?

参考答案:

The purpose of an FTR is to have a group of software engineers examine a discrete work product

and determine whether on not the product is free of errors, omissions or inconsistencies. Software specifications and standards are used as the review criteria.

To perform a successful FTR, the steps described in Section 8.5 are conducted.

Chapter 27

一、客观题

1：Content management establishes a process by which Web content is rendered on the user\'s display screen.

A) True

B) False

A B

----------: B

2：Change management for WebApps is best handled in agile manner.

A) True

B) False

A B

----------: A

3：One reason that version control is difficult for WebApps is that in an uncontrolled environment, you can have multiple authors making changes to the same files from multiple locations without any realizing it.

A) True

B) False

A B

----------: A

4：Which configuration objects would not typically be found in the project database?

A) design specification

B) marketing data

C) organizational structure description

D) test plans

E) both b and c

A B C D E

----------: E

5：SCI standards take a formal view and do not address guidelines for applying change management in agile environments.

A) True

B) False

A B

----------: B

6：When software configuration management is a formal activity, the software configuration audit is conducted by the

A) development team

B) quality assurance group

C) senior managers

D) testing specialists

A B C D

----------: B

7：Modern software engineering practice suggests that a software team maintain SCI\'s in a project database or repository.

A) True

B) False

A B

----------: A

8：Configuration issues that need to be considered when developing WebApps include:

A) content

B) cost

C) people

D) politics

E) a, b, and c

A B C D E

----------: C

9：Many data repository requirements are the same as those for a typical database application.

A) True

B) False

A B

----------: A

10：The primary purpose of configuration status reporting is to

A) allow revision of project schedules and cost estimates by project managers

B) evaluate the performance of software developers and organizations

C) make sure that change information is communicated to all affected parties

D) none of the above

A B C D

----------: C

11：Which of the following is not considered one of the four important elements that should exist when a configuration management system is developed?

A) component elements

B) human elements
C) process elements
D) validation elements
A B C D

----------: D
12：A new _____ is defined when major changes have been made to one or more configuration objects.
A) entity
B) item
C) variant
D) version
A B C D

----------: D
13：Requiring developers to check Web configuration items in and out and sending affected stakeholders e-mail messages automatically are good ways to deal with configuration auditing and reporting for WebApps.
A) True
B) False
A B

----------: A
14：WebApp configuration objects can be managed in much the same way as conventional software configuration objects except for:
A) content items
B) functional items
C) graphic items
D) user items
A B C D

----------: A
15：The ability to track relationships and changes to configuration objects is one of the most important features of the SCM repository.
A) True
B) False
A B

----------: A
16：A basic configuration object is a _____ created by a software engineer during some phase of the software development process.
A) program data structure
B) a software component
C) unit of information

D) all of the above

A B C D

----------: C

17：Once a software engineering work product becomes a baseline it cannot be changed again.

A) True

B) False

A B

----------: B

18：Change control is not necessary if a development group is making use of an automated project database tool.

A) True

B) False

A B

----------: B

19：A data repository metamodel is used to determine how

A) information is stored in the repository

B) data integrity can be maintained

C) the existing model can be extended

D) All of the above

A B C D

----------: D

20：Which of these are valid software configuration items?

A) software tools

B) documentation

C) executable programs

D) test data

E) all of the above

A B C D E

----------: E

21：Which of the following tasks is not part of software configuration management?

A) change control

B) reporting

C) statistical quality control

D) version control

A B C D

----------: C

22：A new _____ is defined when major changes have been made to one or more configuration objects.

A) entity
B) item
C) variant
D) version
A B C D

----------: D

二、主观题

23：What is a software configuration audit?

参考答案: Once a change has been made to a software configuration item and an FTR has been conducted, the software quality team conducts its own review to ensure that software process and standards have been followed (including updating all affected documents and any other affected software configuration items).

24：Describe the change control process for a modern software development project.

参考答案: A change request is submitted for evaluation for a change report is submitted to the change control authority (CCA). The CCA makes the final determination as to the status and priority of the change. An engineering change order (ECO) is generated for each approved change. Items to be changes are checked out of the project database subject to its access control parameters. The modified object is subjected to SQA procedures and returned to the project database. Version control procedures are followed to produce the next version of the software. Synchronization control is used to make sure that parallel changes made by different people do not overwrite one another.

25：How does software configuration management differ for WebApps?

参考答案: The “code and go” philosophy dominates WebApp development. So SCM for WebApps must an agile process. Documentation and review of changes is done on an as needed basis depending on the risk associated with the work products being changed.

26：List the 3 broad categories of information that make up the software configuration.

参考答案: Computer programs (source code and executables), documentation (technical and user), data (internal and external to programs)

27：What is content management?

参考答案: Content management (often used as part of SCM for WebApps) establishes a process that acquires existing content, structures it to be presented to an end-user, and provides for display to the client-side environment.