##### 一、单项选择题（本大题共20小题，每小题1分，共20分）

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

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| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
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| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
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1. What do the level names are used in the Capability Maturity Model? 1.Repeated 2. Optimized 3.Performed 4.Reused. ( C )
2. 1 and 3 B. 3 and 4 C. 2 and 3 D. 2 and 4
3. Which of the items listed below is not one of the process patterns? ( D )
   1. Solution
   2. Resulting Context
   3. Intent
   4. Output
4. The waterfall model of software development is ( A )

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.

1. Which item is correct description for the rapid application development model? ( A )

A. A high speed adaptation of the linear sequential model.

B. Another name for component-based development.

C. A useful approach when a customer cannot define requirements clearly.

D. All of the above.

1. Most software continues to be custom built because ( D )
   1. Component reuse is common in the software world.
   2. Reusable components are too expensive to use.
   3. Software is easier to build without using someone else's components.
   4. Off-the-shelf software components are unavailable in many application domains.
2. Which of these is not one of the phase names defines by the Unified Process model for software development? ( B )
   1. Elaboration phase B. Validation phase

C. Inception phase D. Elaboration phase cons transis production

1. During the process of modeling the system in context, systems that interact with the target system are not represented as ( D )
   1. Peer-level systems B. Subordinate systems

C. Super-ordinate systems D. Working systems

1. What are the four framework activities found in the Extreme Programming (XP) process model? ( D )
   1. Analysis, design, coding, testing
   2. Planning, analysis, coding, testing
   3. Planning, analysis, design, coding
   4. Planning, design, coding, testing
2. In the traditional software engineering, modules must serve in which of the following roles? ( D )
   1. Infrastructure component
   2. Problem domain component
   3. Control component
   4. All of the above
3. Which of the following interface design principles does not allow the user to remain in control of the interaction with a computer? ( D )
   1. Allow interaction to interruptible
   2. Allow interaction to be undoable
   3. Hide technical internals from casual users
   4. Only provide one defined method for accomplishing a task
4. Which of these framework activities is not normally associated with the user interface design processes? ( A )
   1. Cost estimation
   2. Interface construction
   3. Interface validation
   4. User and task analysis
5. What is the normal order of activities in which traditional software testing is organized? ( C )
   1. Integration testing, unit testing, system testing, validation testing
   2. Validation testing, unit testing, integration testing, system testing
   3. Unit testing, integration testing, validation testing, system testing
   4. System testing, validation testing, integration testing, unit testing
6. Bottom-up integration testing has as its major advantage(s) that? ( C )
   1. Major decision points are tested early
   2. No drivers need to be written
   3. No stubs need to be written
   4. Regression testing is not required
7. Which of the following are characteristics of testable software? 　( D )
   1. observability
   2. simplicity
   3. stability
   4. All of the above
8. Black-box testing attempts to find errors in which of the following categories ( D )
   1. Incorrect or missing functions
   2. Interface errors
   3. All of the above
   4. None of the above
9. Which of the following are areas of concern in the design model?　( E )
   1. Architecture
   2. data
   3. Interface
   4. Project scope
   5. a, b and c
10. Which design model elements are used to depict a model information represented from the user`s view? ( C )
    1. Architecture design elements
    2. Component-level design elements
    3. Data design elements
    4. Interface design elements
11. Polymorphism reduces the effort required to extend an object system by? ( B )
    1. Coupling objects together more tightly.
    2. Enabling a number of different operations to share the same name
    3. Making objects more dependent on one another
    4. Removing the barriers imposed by encapsulation
12. Coupling is a qualitative indication of the degree to which a module? ( D )

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

1. The use of traceability tables helps to ( C )
   1. debug programs following the detection of run-time errors
   2. determine the performance of algorithm implementations
   3. identify, control, and track requirements changes
   4. none of the above

**二、判断题（本大题共10小题，每小题1分，共10分）**

##### 提示：正确打，错误打。

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1. Software is not manufactured or does not wear out, Most software is assembled out of components. ×
2. Software engineering tools provide automated or semi-automated support for software engineering process and methods. √
3. Modern software processes must only demand the activities, controls, and work products to ensure a high quality software product. √
4. Drivers and stubs are not needed for unit testing because the modules are tested independently of one another. ×
5. Customers are the only roles as full collaborators to participate on agile process teams. ×
6. Information hiding makes program maintenance easier by hiding data and procedure from unaffected parts of the program.√
7. Diversity of team member skill sets is not key attributes of an effective software team. ×
8. The functionality of most computer systems needs to be enhanced the lifetime of the system. √
9. Elicitation is not one of steps for requirements engineering. ×

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1. Data design actually begins during the creation of the analysis model, not the architectural model. √

##### 三、名词解释（本大题共5小题，每小题3分，共15分）

##### 提示：解释每小题所给名词的含义，若解释正确则给分，若解释错误则无分，若解释不准确或不全面，则酌情扣分。

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| **1** | **2** | **3** | **4** | **5** |
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1. Software process

**Answer:** A process is a collection of activities, actions, and tasks (2分) that are performed when some work product is to be created（1分）.

2. Cohesion

**Answer:** Cohesion implies that a component or class encapsulates only attributes and operations that are closely related to one another and to the class or component itself. ( 3分)

3. White-box testing

**Answer:** White-box testing, sometimes called glass-box testing or structural testing(1分), is a test-case design philosophy that uses the control structure described as part of component-level design to derive test cases. （2分）

4. Software Architecture

**Answer :**The structure of the system, which comprise software components（2分）, the externally visible properties of those components and the relationships among them（1分）

5. Spiral Model

**Answer:** the spiral model is an evolutionary software process model that couples the iterative nature of prototyping(2分) with the controlled and systematic aspects of the waterfall model(1分).

##### 四、问答题（本大题共2小题，每小题10分，共20分）。

1. Describe the roles of the three sections of CRC (class responsibility collaborator) cards?

**Answer:** (回答不完整酌情给分)

1. Class name identifies the data object uniquely. (3分)
2. Responsibilities are the attributes and operations for the class. (3分)

(3) Collaborators are those classes required to provide a class with information needed to complete a responsibility. (4分)

2. Describe the four types of models for requirements modeling and list at least two detail modeling approaches for each.

**Answer:** (回答不完整酌情给分)

(1) Scenario-based models: use cases, user stories. (3分)

(2) Class models: class diagrams, collaboration diagrams. (3分)

(3) Behavioral models: state diagrams sequence diagrams. (2分)

(4) Flow models: DFDs, data models. (2分)

**五．分析设计题（本大题共2小题，共35分）。**

There is a simple online Air ticketing system. Customers can access, browse and book tickets on it. Each ticket information includes its ID, departure time, starting place, ending place, price and passenger information, Seat type and seat number, etc. The customer information includes his/her ID, username, password, telephone number and card type, etc. If any customer wants to book tickets, just chooses them and provides personal information, the total price will be displayed immediately on the screen and the order will also be created and saved automatically by the system. (无标准答案，根据回答情况酌情给分)

1. Assume that costumer had already login this system. Please describe the scenario of customer booking ticket (10分), and design its user interface (exclude the login interface).（10分）

2. The seat types are divided into four classes, such as business class, first class and super economy class and economy class. According to the decision table as following, design a module to calculate the total Price of one order.

|  |  |  |
| --- | --- | --- |
| Seat Type | Purchase Amount | Discount |
| Business class | =1 | None |
| Business class | >1 | 0.9 |
| First class | =1 | None |
| First class | >1 | 0.9 |
| super economy class | =1 | 0.9 |
| super economy class | >1 | 0.8 |
| economy class | =1 | 0.75 |
| economy class | >1 | 0.7 |

Module name: CalculateTotalPrice(Seat Type, Purchase Amount, Price)

InputParamaters: Customer ID, Purchase Amount, Price

ReturnValue: the total price of this order. (TotalPrice= PurchaseAmount \* UnitPrice \* Discount)

* Draw the program flow chart of this module with simple condition (not need to describe the program code of this module) （5分）

1. 流程图规范1分 （2）包括8个简单条件的判断（4分）完全可能没有买票

* Compute McCabe cycle complexity（环路复杂度）of this module.(5分)

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* In order to test the correctness of this module, List a set of independent path for conducting basic path testing.(5分)

（1）基本正确 4分 （2）完全正确 5分