

	FINALTERM EXAMINATION FALL 2006 CS504 - SOFTWARE ENGINEERING – I	Marks: 85 Time: 120min
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StudentID/LoginID: _____

Student Name: _____

Center Name/Code: _____

Exam Date: _____

Please read the following instructions carefully before attempting any of the questions:

- 1. Attempt all questions. Marks are written adjacent to each question.**
- 2. Do not ask any questions about the contents of this examination from anyone.**
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.*
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.*
 - c. Write all steps, missing steps may lead to deduction of marks.*

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

For Teacher's use only											
Question Marks	1	2	3	4	5	6	7	8	9	10	Total
Question Marks	11	12	13	14	15						
Question Marks											

Question No: 1 (Marks: 1) - Please choose one

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

- ▶ **Classical life cycle model**
- ▶ **Fountain model**
- ▶ **Spiral model**
- ▶ **Chaos model**

Question No: 2 (Marks: 1) - Please choose one

Activity Diagram give a pictorial description of

- ▶ **Use case**
- ▶ **Objects**
- ▶ **State of system**
- ▶ **Actors**

Question No: 3 (Marks: 1) - Please choose one

Public metrics are used

- ▶ **to make strategic changes to the software process.**
- ▶ **to make tactical changes during a software project.**
- ▶ **to evaluate the performance of software development teams.**
- ▶ **to make strategic and tactical changes to the software process**

Question No: 4 (Marks: 1) - Please choose one

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

- ▶ **Cycles in the program**
- ▶ **Errors in the program**
- ▶ **Independent logic paths in the program**
- ▶ **Statements in the program**

Question No: 5 (Marks: 1) - Please choose one

The object-behavior model indicates how the system

- ▶ **functions in the operating environment**
- ▶ **objects collaborate with one another**
- ▶ **responds to external stimuli**
- ▶ **responds to internal stimuli**

Question No: 6 (Marks: 1) - Please choose one

Class responsibilities are defined by

- ▶ **its attributes only**
- ▶ **its collaborators**
- ▶ **its operations only**
- ▶ **both its attributes and operations**

Question No: 7 (Marks: 1) - Please choose one

Software risk always involves two characteristics

- ▶ **fire fighting and crisis management**
- ▶ **known and unknown risks**
- ▶ **uncertainty and loss**
- ▶ **staffing and budget**

Question No: 8 (Marks: 1) - Please choose one

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

- ▶ **behavioral testing**
- ▶ **black-box testing**
- ▶ **grey-box testing**
- ▶ **white-box testing**

Question No: 9 (Marks: 1) - Please choose one

The four layers defined for object-oriented design are the same as design layers used for conventional software design.

- ▶ **True**
- ▶ **False**

Question No: 10 (Marks: 1) - Please choose one

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



True



False

Question No: 11 (Marks: 15)

Following is the prototype of a function to find the cube root of a number.

double function(int a);

- a) Identify equivalence partitions to devise black-box test cases for this function.**
- b) Write test cases against each partition identified in part (a).**

Question No: 12 (Marks: 15)

Following are given Symptoms of different Bugs. Identify them:

1.

- **System slowdowns**
- **Crashes that occur "randomly" over a long period of time**

2

- **Results are the opposite of what is expected.**
- **Output looks strange, but has no obvious symptoms of corruption**

3.

- **Unexpected errors in black box testing.**
- **The errors that unexpectedly occur are usually caused by coding errors.**

Question No: 13 (Marks: 15)

Draw a Business Process Diagram according to the following Processes:

1. A patient may come to visit In Patient Department (IPD) or output patient department (OPD)
2. System determines if he is a company patient or a private patient.
3. For a company patient, system verifies him.
4. For an OPD patient, system will issue a chit to the patient and inform him about his number and the consultant to whom he has to consult and he will have to wait for his turn.
5. After verifying an IPD patient, system will create a visit and allocate him a room or a bed etc. If system cannot allocate this, then it will inform the patient. Otherwise the patient is checked in and his information is maintained in the system.
6. System displays information about the expenses of the required service to the patient so that he is informed of his expected expenditure.
7. Some advance payment is also received against the required service and this amount is adjusted in the final settlement.
8. All this information is supplied to cash office that eventually deals with payments, etc.
9. Upon receiving the cash, for OPD patient, a chit will be issued. For IPD patient, an admission form will be filled and this information will be maintained in the system. A receipt will be issued to the patient.
10. For credit transaction, corresponding voucher will be prepared.
11. So the model depicts process before the start of the treatment.
12. A patient may ask to change his service on event of an unsatisfied response from the hospital staff or any other reason. System may cancel his record and pay his amount back.
13. Similarly, a doctor may ask a patient to change his status from OPD to IPD.

Question No: 14 (Marks: 20)

Consider the following code:

```
sorted = false;
while (!sorted) { //1
    sorted = true;
    for (i=0; i < N-1; i++) { //2
        if a[i] > a[i+1] {
            swap(a[i], a[i+1]); //3
            sorted = false;
        } //4
    } //5
} //6
```

- a) Draw the flow graph for this code segment. [10]
- b) Calculate the cyclomatic complexity for this code [5]
- c) Identify one infeasible path if any. [5]

Question No: 15 (Marks: 10)

Write Some of the key advantages which make the object-oriented technology significantly attractive than other technologies? Discuss the difference between Object oriented and Function Oriented approach also elaborate the difference using diagram.