Fourth Semester Examination -- 2007

SOFTWARE ENGINEERING AND OOAD

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate full marks of the questions.

1. Answer the following questions : 2×10

(a) Discuss the major advantages of the OOD methodologies over the data flow-oriented design methodologies.

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(b) Explain why the spiral life cycle model is considered to be a meta model.

(c) Define Risk leverage.

(d) Enumerate two different types of coupling that might exist between two modules.

(e) Distinguish between a DFD and a flow-chart.

(f) What are the advantages of UML class diagrams ?

(g) What is meant by a code walk-through ?

(h) How can you determine the number of latent defects in a software product during the testing phase ?

(i) What are the main advantages of using CASE tools ?

(j) What is an application generator ?

2. (a) What are the symptoms of the present software crisis ? What factors have contributed to the making of the present software crisis ? What are possible solutions to the present software crisis ? 5

(b) What do you understand by 'visibility' of design and code ? How does increased visibility help in systematic software development ? 5

3. (a) What do you understand by the term 'phase containment of errors'? Why is phase containment of errors so important ? How can phase containment of errors be achieved ? 5

(b) Explain with suitable examples the type of product developments for which the evolutionary life cycle model is more suitable and the type of problems for which the spiral model is more suitable. 5

4. (a) What do you mean by the terms Cohesion and Coupling in the context of software design ? How are these concepts useful arriving at a good design of a system ? 6

(b) Compare the relative advantages of the object-oriented and function-oriented approaches to software design. 4

5. (a) What are the different system views that can be modeled using UML? What are the different UML diagrams which can be used to capture each of the views ? Do you need to develop all the views of a system using all the modeling diagrams supported by UML? Justify your answer. 7

(b) What causes increased productivity when the object-oriented paradigm is adopted ? 3

6. (a) Differentiate between black-box testing and white-box testing with suitable examples. 4

(b) What is meant by structural complexity of a problem ? Define a metric for measuring the structural complexity of a program.

How is structural complexity of a program different from its computational complexity ? 6

7. (a) What do you understand by Key Process Areas (KPAs) in the context of SEI CMM ? Would there be any problem if an organization tries to implement the higher-level SEI CMM KPAs before achieving the lower-level KPAs ? Justify your answer using suitable examples. 6

(b) What is a legacy software product ? Explain the problems one would encounter while maintaining a legacy product. 4

8. (a) What do you mean by the term software reverse engineering ? Why is it required ? Explain the different activities undertaken during reverse engineering. 5

(b) What do you understand by the term 'faceted classification' in the context of software reuse ? How does faceted classification simplify component search in a component store ? 5

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