Total number of printed pages – 7

B. Tech

BCSE 3402

Seventh Semester Examination – 2007

SOFTWARE ENGINEERING

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 marks.

1. Answer the following questions : 2×10

   (a) Define software engineering. What is the difference between just writing software and software engineering ?

P.T.O.

(b) How cohesions and couplings are related ?

(c) What makes software design different from coding ?

(d) What do you mean by the term functional independence in the context of software design ?

(e) Explain the difference between black box testing and white box testing.

(f) What are the two most important aims of software inspection ? What are the three basic input documents to any inspection?

(g) Are lines-of-code (LOC) a useful productivity measure ?

(h) What is SPMP document ?

(i) What are the main steps that must be taken to ensure there is a high degree of reusability in a software system ?

(j) What is the new Cocomo-II formula for calculating project effort ?

2. (a) What is the principal aim of the Software Engineering discipline ? What do you mean by the term software reverse engineering ? Why is it required ? 5

(5) Do you design software when you "write" a program ? What is a good software design ? 5

3. (a) Explain how to select the best risk reduction technique when there are many ways of reducing risk ? 5

(b) When a software project has got seriously behind schedule it is not usually appropriate to add more staff. Explain why this is so and suggest what effective actions might be taken to best recover from the situation ? Justify the actions you would take. 5

4. (a) Create a use case diagram for the following description :

A Professor uses an office for preparing classes and carrying out research. Both activities include studying the relevant literature. The office is also used for meeting students. 5

(b) How do we construct a black box testing plan ? Who should do the testing ? 5

5. (a) What is a user interface portion of a software product ? What are the characteristic of a good user interface ? 5

(b) Define, compare, and contrast KLOC and FP metrics. What are pros and cons of each ? 5

6. (a) Develop an activity diagram showing the following activities and their synchronization. Use concurrent activities where it is possible.

Problem description : To develop a software system, the first step is to develop the system architecture. Based on the system architecture, a system design can be developed and then implemented. The architecture can also be used for defining test cases. In addition, it can be used as a basis for the user manual. When all things are

available, the system can be delivered to the customer. Then it will be installed and beta tested. 5

(b) What is the purpose of Capability Maturity Model ? Given a particular experiment and findings, assess the reliability of the findings. 5

7. (a) What are the Lehman's law for software evaluation ? What are different problem associated with software maintenance ? 5

(b) What is the relationship between cyclomatric complexity and program comprehensibility ? Can you justify why such an apparent relationship exists ? 5

8. (a) How do we assess the quality of a software design ? 2.5

(b) What is role of interfaces in a class-based component-level design ? 2.5

(c) Explain what is the main goal of high-level or architectural design and how it differs from the detailed design phase ? 2.5

(d) Define and differentiate between The Waterfall Model and The Spiral Model. 2.5