T.E. Computer (Sem. – II) Examination, 2009
(2003 Course)
SOFTWARE ENGINEERING

Time : 3 Hours | Max. Marks : 100

Instructions : *1) Answers to the **two** Sections should be written in **separate** answer books.*
*2) Figures to the **right** indicate **full** marks.*
*3) From Section **I**, Answer (**Q1** or **Q2**) and (**Q3** or **Q4**) and (**Q5** or **Q6**).*
*4) From Section **II**, answer (**Q7** or **Q8**) and (**Q9** or **Q10**) and (**Q11** or **Q12**).*
*5) **Neat** diagrams must be drawn **wherever** necessary.*
*6) Make suitable assumptions **wherever** appropriate and relevant.*

SECTION – I

1. a) Explain the Personal Software Process (PSP). **5**

   b) Explain with neat diagram, the waterfall model for software development. What are its drawbacks ? **6**

   c) Explain the capability levels of Capability Maturity Model Integration (CMMI). **6**

OR

2. a) Explain the Team Software Process (TSP). **5**

   b) Explain in detail the management myths and the practitioner's myths as types of software myths. **6**

   c) Write short note on the Incremental model. **6**

3. a) Why are models important in software engineering ? Explain the roles of analysis and design models. **5**

   b) Explain the various elements of computer-based system. **6**

c) Explain the following factors that should be considered when constructing a system model : **6**

i) Simplifications

ii) Limitations

iii) Constraints.

OR

4. a) What is the purpose of activity diagram in the context of system modeling ? Explain activity diagram notations with suitable example. **5**

b) Explain with diagram Hatley Pirbhai modeling for system context diagram. **6**

c) Explain the following software engineering practices : **6**

i) Communication practices

ii) Planning practices.

5. a) Explain Inception, Elaboration and Validation as the requirements engineering tasks. **6**

b) For "Banking System", make your assumptions about the scope of the system, identify four use cases and depict them in a diagram. **4**

c) Explain the following elements of analysis model : **6**

i) Class – based elements

ii) Behavioral elements

iii) Scenario – based elements.

OR

6. a) Explain the following data modeling concepts : **6**

i) Data objects

ii) Relationships

iii) Cardinality and modality.

b) Explain data-flow oriented modeling with the notations for Data Flow Diagram (DFD). **4**

c) What is use case ? What are the various elements of use case template ? **6**

SECTION – II

7. a) Explain the following design concepts : **4**
   i) Modularity
   ii) Architecture.
   b) What are the golden rules of user interface design ? Explain. **6**
   c) Explain the following : **7**
   i) Component level design elements
   ii) Data design elements.

OR

8. a) Explain in short the following design concepts : **4**
   i) Functional independence
   ii) Information hiding.
   b) Explain the design quality guidelines and the design quality attributes. **6**
   c) Explain the following : **7**
   i) Types of design classes
   ii) High cohesion and low coupling as the characteristics of a design class.

9. a) Explain top down integration testing strategy in detail. **6**
   b) Explain performance testing as a type of system testing. **3**
   c) Explain in detail, basis path testing as a white box testing technique with following details : **8**
   i) Flow graph notation
   ii) Cyclomatic complexity
   iii) Test case derivation.

OR

10. a) Explain the following types of control structure testing : **6**
    i) Condition testing
    ii) Data flow testing.
    b) Explain security testing as a type of system testing. **3**
    c) Explain the following : **8**
    i) Smoke testing
    ii) Unit testing.

11. a) Explain in detail metrics for testing. **6**
    b) Give brief explanation for the term "Metrics". What are the attributes that software metrics should satisfy ? **6**
    c) Explain the following quality factors : **4**
    i) Maintainability
    ii) Reusability.

OR

12. a) Write short note on product metrics landscape. **6**
    b) What is software quality ? Explain the metrics for maintenance. **6**
    c) Give short explanation for following : **4**
    i) Reliability as a software quality factor
    ii) Coupling as a measurable characteristic of an object oriented design.
