

## B3.3-R4: SOFTWARE ENGINEERING & CASE TOOLS

### NOTE:

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.
  - a) How does software differ from the artifacts produced by other engineering disciplines?
  - b) List three areas in which process models may differ from one another.
  - c) Describe the phases of the prototyping model for software development.
  - d) What are the primary advantages of the component-based process model for software engineering?
  - e) Why has the Personal Software Process not been widely adopted by industry?
  - f) Why are evolutionary prototyping models considered to be the best approach to software development in modern context?
  - g) Describe the differences between software construction and software deployment.

**(7X4)**
  
2.
  - a) What are the essential steps for requirements engineering? Describe the job of the requirements engineer with respect to stakeholder collaboration.
  - b) Discuss the benefits of using analysis patterns during the analysis modeling process.
  - c) What deliverables result from the requirements engineering process?

**(6+6+6)**
  
3.
  - a) What are non-functional requirements? Why are they required?
  - b) Describe the general process of creating a data flow diagram (DFD). Also describe its importance.
  - c) Describe, Inception, Elaboration, Construction, and Transition phases of RUP.

**(6+6+6)**
  
4.
  - a) List three characteristics that can serve as a guide to evaluate design quality.
  - b) Explain, in brief, a Test Case and a Test Plan.
  - c) What are the attributes and principles of a good software design?

**(6+6+6)**
  
5.
  - a) Explain how effective modular design is achieved through functional independence of the individual modules? Also describe information hiding.
  - b) List four design entities required for a complete specification of a software design and explain the role of each entity.
  - c) Explain design pattern with the help of an example of abstract factory.

**(6+6+6)**

**6.**

- a) Describe the differences between software module coupling and cohesion. What should be preferred-strong coupling or strong cohesion?
- b) What are the steps required to complete the component-level design for a software development project?
- c) Draw a use case diagram for a bank ATM transaction.

**(6+6+6)**

**7.**

- a) Describe quality control process using software metrics and measurements.
- b) Explain the software maintenance types and their importance.
- c) Describe what do you understand by domain analysis. Draw a diagram to explain?

**(6+6+6)**