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**Fifth Semester B.E. Degree Examination, May/June 2010**  
**Software Engineering**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

1. a. What are the key challenges facing software engineering? Explain. (04 Marks)  
b. What are emergent system properties? Give examples for each. (04 Marks)  
c. With a figure, explain the requirements of an engineering process. (12 Marks)
2. a. With a figure, explain the phases in the RUP. (05 Marks)  
b. Explain the functional and non-functional requirements for any system. (10 Marks)  
c. Give the number of possible metrics to specify non-functional system properties. (05 Marks)
3. a. What is an architectural design? Explain the architectural design decisions. (06 Marks)  
b. Why requirements need to be validated? Explain the check made in requirement validation. (06 Marks)  
c. Explain the requirement elicitation and analysis phase, with spiral diagram. Give reasons, why is it difficult phase in requirements engineering process. (08 Marks)
4. a. Explain the IEEE standard format for the requirement document in detail. (06 Marks)  
b. Draw and explain the use-case diagram and sequence diagram for a library system or ATM withdraw system. (06 Marks)  
c. Refer table below for task durations and interdependencies:

Task	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>
Duration in days	9	16	11	15	7	20	26	15	15	16
Interdependencies	-	-	-	T <sub>1</sub> (M <sub>1</sub> )	T <sub>1</sub> T <sub>2</sub> (M <sub>2</sub> )	T <sub>2</sub> T <sub>3</sub> (M <sub>3</sub> )	T <sub>3</sub> (M <sub>5</sub> )	T <sub>4</sub> T <sub>5</sub> (M <sub>4</sub> )	T <sub>5</sub> T <sub>6</sub> (M <sub>6</sub> )	T <sub>8</sub> (M <sub>7</sub> )

- i) Draw activity network                      ii) Find and highlight critical path. (08 Marks)

**PART – B**

5. a. Name and explain the three organizational styles that are very widely used, with necessary figure. (10 Marks)  
b. Explain with a figure, the central control and event based control system. (10 Marks)
6. a. What are agile methods? Discuss the principles of agile methods. (07 Marks)  
b. What are the practices followed in extreme programming? (06 Marks)  
c. With a figure, explain the process of prototype development. What are the benefits of using prototyping? (07 Marks)
7. a. What is verification and validation? Explain why validation is a particularly difficult process. (05 Marks)  
b. Explain the software development process model, using V-model with figure. (10 Marks)  
c. The clean room approach to software development is based on five key strategies. Explain them. (05 Marks)
8. a. Name and explain the factors governing staff selection. (10 Marks)  
b. Explain with a figure, the people capability maturity model. (10 Marks)

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## Fifth Semester B.E. Degree Examination, December 2010

### Software Engineering

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

#### PART – A

- 1
  - a. What are the attributes of good software? What are the key challenges facing software engineering? (10 Marks)
  - b. Describe the general model of design process. (06 Marks)
  - c. Explain the requirements engineering process, with a neat block diagram. (04 Marks)
  
- 2
  - a. Describe four different types of non-functional requirement, which may be placed, on the systems. Give examples of each of these types of requirements. (10 Marks)
  - b. Describe the salient features of spiral model of software process, with an illustration diagram. (10 Marks)
  
- 3
  - a. With a neat block diagram, explain components of a CASE TOOLS for structured method support. (10 Marks)
  - b. What are the most important dimensions of system dependability? (06 Marks)
  - c. What is requirement elicitation and analysis? Explain. (04 Marks)
  
- 4
  - a. Explain state machine model for a simple microwave oven. (10 Marks)
  - b. Write the structure of a requirement document suggest by IEEE standard. (05 Marks)
  - c. What is object aggregation? Explain with an example. (05 Marks)

#### PART – B

- 5
  - a. Explain with a figure, the data flow model of an invoice processing system. (10 Marks)
  - b. Draw and explain the sequence and state diagram for a typical weather station. (10 Marks)
  
- 6
  - a. Explain the structure of a software test plan. (07 Marks)
  - b. Give a brief description of five principles of agile methods. (07 Marks)
  - c. Discuss the advantages of pair programming. (06 Marks)
  
- 7
  - a. Explain the characteristics of clean room software development. (07 Marks)
  - b. What are the characteristics of rapid software development? (07 Marks)
  - c. What is software prototyping? Give benefits of software prototyping. (06 Marks)
  
- 8
  - a. Differentiate between black box testing and white box testing. (07 Marks)
  - b. List the factors governing staff selection. (07 Marks)
  - c. Name the various estimation techniques in software systems. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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