

MCA43

**NEW SCHEME**

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**Fourth Semester M.C.A Degree Examination, January/February 2005**

**Master of Computer Applications**

**Software Engineering**

Time: 3 hrs.]

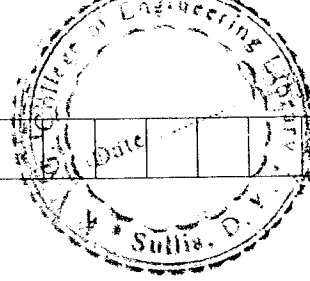
[Max.Marks : 100

**Note:** Answer any FIVE full questions.

1. (a) What is software engineering? How is it different from system engineering? (6 Marks)  
(b) What are the professional and ethical responsibilities, a software engineer should have? (6 Marks)  
(c) With a neat diagram, explain the system engineering process. (8 Marks)
2. (a) Explain system procurement process with a figure. (10 Marks)  
(b) Explain waterfall model in detail. Mention its merits and demerits. (10 Marks)
3. (a) Explain the structure of a requirements document. (10 Marks)  
(b) Distinguish between enduring and volatile requirements. (5 Marks)  
(c) Write a note on ethnography. (5 Marks)
4. (a) What is a DFD? Write the symbols used in DFD. Draw a DFD for a library management system. (10 Marks)  
(b) Bring out the differences between throwaway and evolutionary prototyping. (10 Marks)
5. (a) What is architectural design? Explain the repository model and the client server model. (10 Marks)  
(b) Explain the following briefly :  
i) Object models    ii) Data flow models    iii) Generic models. (10 Marks)
6. (a) Distinguish clearly between black box testing and white box testing. (5 Marks)  
(b) What is the role of flow graph in software testing? Explain with an example. (5 Marks)  
(c) Explain briefly, the principles of user interface design. (10 Marks)
7. (a) What is the need for software project planning? About what planning is done? Briefly explain. (10 Marks)  
(b) Write a note on automated static analysis. (10 Marks)
8. Write short notes on : (5 × 4=20 Marks)
  - i) Object oriented testing
  - ii) Reliability prediction
  - iii) Group cohesiveness
  - iv) Algorithmic cost models in project planning.

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**NEW SCHEME**

**Fourth Semester MCA Degree Examination, July 2007**  
**Software Engineering**

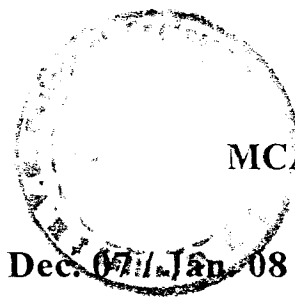
Time: 3 hrs.]

[Max. Marks:100

**Note :** Answer any FIVE full questions.

- 1 a. Define the term software. Specify the attributes of a good software. (04 Marks)  
b. What are the key challenges faced by software engineers? Briefly explain. (04 Marks)  
c. Describe the water fall model. Discuss its advantages and disadvantages. (12 Marks)
- 2 a. What do you mean by requirement engineering process? Explain the phases in the requirement engineering process. (06 Marks)  
b. List the types of non-functional requirements. Explain briefly. (06 Marks)  
c. Explain the structure of a requirement document. (08 Marks)
- 3 a. Explain system procurement process. (07 Marks)  
b. List the different types of system model which must be produced during the analysis process. (05 Marks)  
c. What is evolutionary prototyping? How does it differ from throw – away prototyping? (08 Marks)
- 4 a. Explain repository model. Discuss the advantages and disadvantages of a shared repository. (10 Marks)  
b. Draw a data flow diagram for invoice processing system. (03 Marks)  
c. Explain the design principles to be followed while designing user interface. (07 Marks)
- 5 a. Describe the characteristics of clean room software development. (08 Marks)  
b. Write a note on stress testing. (04 Marks)  
c. Explain the various stages involved in automated static analysis. (08 Marks)
- 6 a. Define black box testing and white box testing. What is the difference between the two? (05 Marks)  
b. Discuss the various project management activities. (07 Marks)  
c. Describe the process of risk management in software project management. (08 Marks)
- 7 a. List and briefly explain the factors that influence group working. (10 Marks)  
b. What is dependability? How is it important for a critical system? (06 Marks)  
c. What are the approaches that might be used to improve the reliability of a system? (04 Marks)
- 8 Write short notes on:  
a. Ethnography.  
b. Product metrics.  
c. Data dictionary.  
d. Requirements validation. (20 Marks)





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**Fourth Semester M.C.A Degree Examination, Dec. 07/Jan-08**  
**Software Engineering**

Time: 3 hrs.

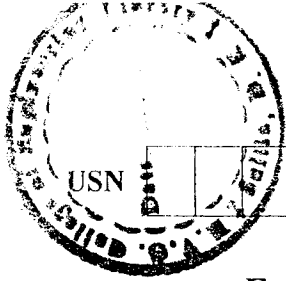
Max. Marks:100

**Note : Answer any FIVE full questions.**

- 1 a. What is software engineering? How is it different from system engineering? Explain the system engineering process with a neat diagram. (10 Marks)  
b. Explain the waterfall model with neat block diagram. Give the limitations of waterfall model. (10 Marks)
- 2 a. Discuss the sequence of activities involved in requirements engineering process. (10 Marks)  
b. What is software prototyping? What are its advantages and disadvantages? (06 Marks)  
c. Differentiate between functional and non functional requirements. (04 Marks)
- 3 a. What is system model illustrate dataflow model with example. (10 Marks)  
b. Explain the structure of software requirements document. (10 Marks)
- 4 a. Differentiate between throwaway and evolutionary prototyping. (08 Marks)  
b. Describe software verification and software validation. (06 Marks)  
c. Write a note on user – interface prototyping. (06 Marks)
- 5 a. Describe Top – down and bottom – up testing strategies. (10 Marks)  
b. Explain the role of flow graph in software testing with example. (10 Marks)
- 6 a. Describe cocomo model of cost estimation by giving an example. (10 Marks)  
b. Explain the principles of user interface design in detail. (10 Marks)
- 7 a. Describe various levels of people capability maturity model. What is its importance? (10 Marks)  
b. Explain the factors influencing the staff selection for a software project. (10 Marks)
- 8 Write short notes on :  
a. Product quality metrics  
b. Clean room software development  
c. Integration test.  
d. System procurement  
e. Program description language (PDL). (20 Marks)

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REFERENCE COPY

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Srinivas Institute of Technology  
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MCA43

## Fourth Semester MCA Degree Examination, June / July 08

### Software Engineering

Time: 3 hrs.

Max. Marks: 100

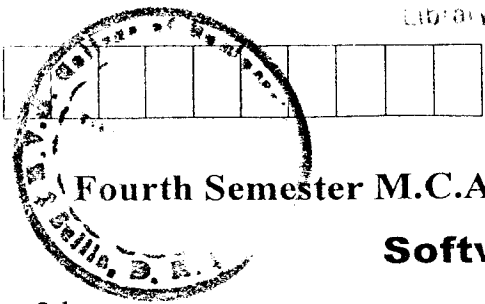
**Note : Answer any FIVE full questions.**

- 1
  - a. What are the attributes of a good software? (04 Marks)
  - b. Explain briefly the activities involved in a software process. (04 Marks)
  - c. Write a short note on system decommissioning. (04 Marks)
  - d. Explain in detail the incremental development process with a neat block diagram. (08 Marks)
  
- 2
  - a. What are non – functional requirements? Explain the three types of non-functional requirements. (08 Marks)
  - b. Specify the IEEE's standard structure for a requirements document. (04 Marks)
  - c. What is requirement engineering? Describe the principal activities of a requirements engineering process with a neat diagram. (08 Marks)
  
- 3
  - a. What is a CASE workbench? Describe the various components of a CASE workbench with a neat diagram. (08 Marks)
  - b. What is evolutionary prototyping? Explain with a neat diagram. (12 Marks)
  
- 4
  - a. Describe repository model. What are the advantages and disadvantages of a shared repository? (10 Marks)
  - b. What is modular decomposition? Illustrate one of the models which can be used for modular decomposition. (10 Marks)
  
- 5
  - a. List the stages of object –oriented design. Explain any two. (10 Marks)
  - b. Explain the principles that should be followed while designing user – interface. (10 Marks)
  
- 6
  - a. Explain the clean room software development philosophy. (12 Marks)
  - b. Compare top –down and bottom – up integration testing strategies. (08 Marks)
  
- 7
  - a. What is software cost estimation? Describe any two techniques. What are its merits and demerits? (10 Marks)
  - b. Illustrate the factors governing staff selection. (10 Marks)
  
- 8 Write short notes on :
  - a. Black box testing
  - b. Object – oriented metrics
  - c. Software reliability
  - d. Milestones and deliverables. (20 Marks)

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**Fourth Semester M.C.A Degree Examination, June – July 2009**  
**Software Engineering**

Time: 3 hrs.

Max. Marks:100

*Note: Answer any FIVE full questions.*

- 1
  - a. What is software? Discuss the attributes of good software. (05 Marks)
  - b. Give a brief account of IEEE code of ethics. (05 Marks)
  - c. What are emergent system properties? Give examples. (05 Marks)
  - d. What is safety? Suggest appropriate measures for improving safety of a system. (05 Marks)
  
- 2
  - a. Explain Rational Unified Process in detail. (10 Marks)
  - b. Explain waterfall model with its merits and demerits. (10 Marks)
  
  - c. Distinguish between functional and non-functional requirements with examples. (05 Marks)
  - d. What is the general structure of a requirements document suggested by IEEE? (05 Marks)
  - e. Explain requirements elicitation and analysis. (07 Marks)
  - f. What do you understand by ethnography? (03 Marks)
  
- 4
  - a. What is state machine model? Explain with example. (07 Marks)
  - b. Write a short note on data dictionary. (03 Marks)
  - c. Refer table-1 given 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
Inter-dependencies	-	-	-	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> )

Answer the following :

- i) Draw activity network
- ii) Find and highlight critical path. (10 Marks)
  
- 5
  - a. Discuss various centralized control models with illustration. (10 Marks)
  - b. Explain object oriented design process giving its advantages and disadvantages. (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? (07 Marks)
  - c. Write a note on system re-engineering. (06 Marks)
  
- 7
  - a. Explain clean room software development giving its advantages and disadvantages. (10 Marks)
  - b. What is path testing and cyclomatic complexity? Explain with example. (10 Marks)
  
- 8
  - a. Discuss Maslow's theory of motivation. (05 Marks)
  - b. Explain COCOMO model in detail. (10 Marks)
  - c. Explain group cohesiveness and its advantages. (05 Marks)





## Fourth Semester MCA Degree Examination, May/June 2010

### Software Engineering

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1
  - a. What is software engineering? What is the difference between a software process model and a software process? (08 Marks)
  - b. What are the important attributes which all software products should have? (04 Marks)
  - c. What are emergent system properties? How do they influence the overall reliability of a system? (08 Marks)
  
- 2
  - a. Define safety-critical system. Explain with an example. (05 Marks)
  - b. Explain reuse-oriented development of a software project. (07 Marks)
  - c. With the help of a neat diagram, explain the various testing phases in the software process. (08 Marks)
  
- 3
  - a. What are non-functional requirements? With the help of a neat diagram, show the classification of the different types of non-functional requirements that may arise in software specification. (10 Marks)
  - b. Identify three viewpoints in a library system. List the services and data which might be provided along with events which might control the delivery of these services. (10 Marks)
  
- 4
  - a. Define the behavioural model. Explain any one of them, with an example. (08 Marks)
  - b. What is a project scheduling process? What are the steps involved? (05 Marks)
  - c. What are the important stages involved in the process of risk management? (07 Marks)
  
- 5
  - a. Explain the semantic data model of a software design. (05 Marks)
  - b. What is the importance of data dictionary, in data model? (05 Marks)
  - c. Why are 'throw-away' prototypes recommended in prototype system developed, when the system is considerably large? (10 Marks)
  
- 6
  - a. What is the difference between an application frame work and COTS product, when reuse is considered? (10 Marks)
  - b. Why id hardware reliability metrics not useful always, in estimating software system reliability? Explain the other dimensions of overall system reliability. (10 Marks)
  
- 7
  - a. Explain why program inspection is an effective technique for discovering errors in a program. What are its advantages? (10 Marks)
  - b. What are the different phases of system testing? Explain. (10 Marks)
  
- 8
  - a. Explain people capability maturity model of managing organization's human assets. (10 Marks)
  - b. Explain how the algorithmic approach to cost estimation may be used by project managers for option analysis. (10 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+6 = 50, will be treated as malpractice.

