Course Code : 18CS45

USN : _____

## Fourth Semester B.E MAKEUP Examination, AUGUST_OCTOBER_2021

# SOFTWARE ENGINEERING

Time: 3 hrs

Max. Marks :100

Instructions : Answer any five full questions. Assume missing data

| | L | CO | PO | M |
|---|---|---|---|---|
| 1a. Define Software Engineering, List and Explain essential attributes of good software? | [2] | [1] | [1] | [6] |
| 1b. With a neat diagram explain waterfall model? Explain the problems involved in waterfall model? | [2] | [1] | [1] | [6] |
| 1c. List and explain Software Engineering (ACM/IEEE) Code of Ethics and Professional Practices? | [2] | [1] | [8] | [8] |
| 2a. Explain the difference between Generic and Customized product with example? | [2] | [1] | [1] | [6] |
| 2b. Compare and differentiate between Change avoidance & Change tolerance with example. | [4] | [1] | [1] | [6] |
| 2c. Explain Reuse-oriented developmental model with a neat diagram? Also discuss the benefits of this model as compared to waterfall model? | [2] | [1] | [1] | [8] |
| 3a. With the neat diagram explain the types of non-functional requirements? | [2] | [1] | [1] | [6] |
| 3b. Identify and explain 03 Functional and 03 Non-Functional requirements for the GIT Examination software system. | [3] | [1] | [12] | [6] |
| 3c. Explain in brief the structure of a requirements document that is based on an IEEE standard for requirements documents. | [2] | [1] | [1] | [8] |
| 4a. Explain with a neat diagram the different steps in the requirements elicitation and analysis process? | [2] | [1] | [1] | [6] |
| 4b. Describe different metrics for specifying non-functional requirements? | [2] | [1, 2] | [1] | [6] |
| 4c. List the different formats of specifying system requirement specification. For student admission process in engineering colleges under CET/COMEDK/MANAGEMENT Quota. Use any one of the function you have identified related to admission process and represent it using structured form based specification method. | [4] | [1] | [3] | [8] |
| 5a. Explain Context model with an example | [2] | [1] | [1] | [6] |
| 5b. Develop a set of Use Cases that would serve as bases for understanding the requirement for a Software Engineering attendance management system. Note: Actors: Faculty, Students, COE, Dean academics, University. | [3] | [2] | [3] | [6] |
| 5c. With a neat diagram explain the flow of Analysis model into the design model | [4] | [4] | [3] | [8] |
| 6a. With a neat diagram explain the difference between plan driven development and Agile Development | [2] | [1] | [1] | [6] |
| 6b. List and Explain Extream programming practices. | [2] | [3] | [1] | [6] |

6c. Analyze the credit card due payment method in Banking Application, design 1 story card,2 task cards and 2 test cards for the same.

[2] [3] [1] [8]

7a. Describe the factors affecting Software Pricing.

[2] [3] [1] [5]

7b. With a neat diagram explain the project planning process.

[2] [2] [1] [7]

7c. Draw the 'Activity Bar-chart' for the following project schedule.

| Task | Duration | Dependency |
|---|---|---|
| T1 | 10 | |
| T2 | 15 | |
| T3 | 15 | T1(M1) |
| T4 | 10 | |
| T5 | 10 | T2,T4(M3) |
| T6 | 5 | T1,T2(M4) |
| T7 | 20 | T1(M1) |
| T8 | 25 | T4(M2) |
| T9 | 15 | T3,T6(M5) |
| T10 | 15 | T7,T8(M6) |

[3] [2] [3] [8]

8a. List the Project Plan sections and also explain in brief the various Project plan supplements.

[2] [3] [1] [6]

8b. Discuss algorithmic cost modeling formula to show the efforts put in to predict project costs

Calculate the Effort where organizational dependent constant is 2, B=1.05, Multiplier is 2, size is 10.

[3] [3] [3] [6]

8c. Define Project Scheduling. With a neat diagram explain project scheduling process in a plan driven project?

[2] [2] [11] [8]

9a. Explain with a neat diagram input-output model for program testing.

[2] [4] [1] [6]

9b. With a neat diagram explain test driven development process .

[2] [4] [1] [6]

9c. Elective Subject allocation for 7$^{th}$semester students is done by the Head of the Department of CSE through web interface software. Analyze the given requirements and design test cases for the same by using Requirements-based testing. "For the 7 semester students of the CSE, department needs to allocate Elective subject based on student's previous semester academic performance and the subject preferences given by the student in the subjects of relative domain. If a student has performed less in a particular domain, then allocation of an elective in a relative domain shall produce warning message being issued to the Head of the department. If the Head of the Department chooses to ignore the warning, then he has to provide valid reason why this warning has been ignored" .

[4] [4] [3] [8]

10a. Explain with a neat diagram model of software testing.

[2] [4] [1] [6]

10b. Define equivalence partition testing? Analyze the following scenario by using equivalence partition method (Identify valid and invalid partitions), Assume we have to test a text field (Name) that accepts the length between 6-12 characters.

[4] [4] [3] [6]

10c. With a neat diagram explain acceptance testing process and also discuss its stages.

[2] [4] [1] [8]

USN

16CS/IS53

Fifth Semester B.E. Makeup Examination, January 2020

# SOFTWARE ENGINEERING

Time: 3 Hours

Max. Marks: 100

*Instructions:* 1. *All units carry equal marks*
2. *Answer (1) question from each unit.*

## UNIT - I

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 1 | a. | List and explain all attributes of a 'Good Software'. Which are the key challenges for software engineering? Write a brief note on each. | (2) | (1) | (1) | (08) |
| | b. | Describe 'Software Engineering Ethics' justifying the professional responsibility, which is not bound by laws. | (2) | (1) | (1) | (07) |
| | c. | Define software process. List all process activities and explain them in the context of any one software process model. | (2) | (2) | (1) | (05) |

**OR**

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | a. | Explain features of 'Professional Software Development'. Write at least 5 important questions asked frequently about the professional software development with the solutions. | (2) | (1) | (1) | (05) |
| | b. | Write a note on the following:<br>i) Software Engineering diversity.<br>ii) Software Engineering and the web. | (2) | (2) | (1) | (07) |
| | c. | Explain the process of 'Coping with Changes'. Illustrate the features of Boehm's spiral model with a neat diagram. | (2) | (2) | (2) | (08) |

## UNIT – II

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 3 | a. | Distinguish 'Plan Driven' and 'Agile Development' methods with their features and relevant diagram. | (4) | (3) | (3) | (06) |
| | b. | Illustrate 'Extreme Programming 'reflecting the principles of agile methods. | (2) | (2) | (2) | (06) |
| | c. | Describe project scheduling with the figure showing different processes involved. Which are the most common used schedule representations? | (2) | (2) | (1) | (08) |

**OR**

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | a. | Explain the effect of Software Pricing and the factors involved. Give an example. | (2) | (3) | (2) | (07) |
| | b. | Categorize types of project plans with a brief note on each. Which are the main sections normally considered in the project details? | (4) | (3) | (3) | (07) |
| | c. | Write a note on 'Agile Planning' and its approach using extreme programming. | (2) | (2) | (1) | (06) |

## UNIT - III

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 5 | a. | Apply that you are developing software for INDIAN RAILWAYS. Identify and explain at-least FOUR functional requirements and TWO non-functional requirements for the same. | (3) | (2) | (2) | (08) |

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

b. Explain, what is a requirement? List the different types of requirement with examples.
(2) (3) (1) (06)

c. List and explain the metrics for specifying non-functional requirements.
(2) (3) (1) (06)

**OR**

6 a. List and explain the structure of a requirement document.
(3) (2) (2) (08)

b. List the readers of different types of requirement specifications. Differentiate between functional and non-functional requirements.
(2) (3) (1) (06)

c. Differentiate between Natural Language Specification and Structured Specification.
(2) (3) (1) (06)

**UNIT - IV**

L CO PO M

7 a. Describe how object-oriented systems approach is better than functional approach to accommodate the changes to existing system. Give an example.
(2) (3) (2) (07)

b. Draw the model of traditional software testing process and explain the types of testing phases.
(3) (2) (2) (06)

c. Define 'Design Models'. Explain how they are classified using UML?
(2) (2) (1) (07)

**OR**

8 a. Classify and explain the objectives of three types of testing used in 'Development Testing'.
(4) (2) (2) (08)

b. Explain 'System Context and Interactions' involved during system design.
(2) (1) (1) (06)

c. Illustrate 'Input-Output model' of software testing with explanation for verification, validation, software purposes and user requirements.
(2) (2) (2) (06)

**UNIT -V**

L CO PO M

9 a. What is 'Version Management'? Explain all five ranges of features that 'Version Management System' provides.
(2) (2) (1) (10)

b. Describe the software 'Change Management'. Explain all significant factors that should be taken into account to decide over the change.
(2) (1) (1) (10)

**OR**

10 a. Define 'Quality Attribute'. Write a note on all quality attributes involved for software development.
(1) (1) (1) (06)

b. Write a note on product standards and process standards.
(2) (2) (2) (07)

c. Describe the quality standards and the associated ISO 9001 framework.
(2) (1) (1) (07)



Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

USN : _____ Course Code : 16CS/IS53

**Semester B.E FASTTRACK Examination, OCTOBER_NOVEMBER_2020**

**SOFTWARE ENGINEERING**

Time: 3 hrs Max.Marks :100

Instructions :1.Answer any Five full Questions selecting at least One Full Question from Each Unit. 2. Each Question carry Equal Marks. 3. Missing Data may be suitably assumed.

**MODULE 1** L CO PO M

1a. List and explain all attributes of a 'Good Software'. Which are the key challenges for software engineering? Write a brief note on each.

[1] [1] [1] [8]

1b. Describe 'Software Engineering Ethics' justifying the professional responsibility, which is not bound by laws.

[2] [2] [2] [7]

1c. Define software process. List all process activities and explain them in the context of any one software process model.

[1] [2] [1] [5]

OR

2a. Explain features of 'Professional Software Development'. Write 5 important questions asked frequently about the professional software development with the solutions.

[1] [2] [1] [5]

2b. Write a note on the following:
I) Software Engineering Ethics
II) Software Engineering Diversity & Examples

[2] [2] [2] [7]

2c. Explain the process of 'Coping with Changes'. Illustrate the features of Boehm's spiral model with a neat diagram.

[3] [2] [2] [8]

**MODULE 2**

3a. Distinguish 'Plan Driven' and 'Agile Development' methods with their features and relevant diagram.

[2] [2] [2] [6]

3b. Illustrate 'Extreme Programming 'reflecting the principles of agile methods.

[3] [2] [3] [6]

3c. Describe project scheduling with the figure showing different processes involved. Which are the most common used schedule representations?

[2] [2] [1] [8]

OR

4a. Explain the effect of Software Pricing to the customers and the factors involved using examples.

[2] [2] [2] [7]

4b. Write a note on 'Agile Planning' and its approach using extreme programming.

[2] [1] [1] [6]

4c. Write a note on 'Agile Planning' and its approach using extreme programming.

[2] [1] [1] [6]

**MODULE 3**

5a. Distinguish 'User level' and 'System level' requirement. Giving an example show the changes in requirement description at different levels of process.

[3] [2] [2] [6]

5b. Classify and explain functional & non-functional requirements. With a block diagram show the non-functional types of requirement.

[2] [2] [1] [8]

5c. Describe all the process activities. Draw a block diagram of 'Requirements Elicitation and Analysis' with note on its importance.

[1] [1] [1] [6]

OR

6a. Describe the requirement specification and the notations used. Distinguish Natural Language specification and structured specification.

[4] [2] [2] [10]

6b. Illustrate the requirements elicitation and analysis process. List the difficulties in 'Eliciting and Understanding' requirements from system stakeholders.

[3] [3] [2] [10]

## MODULE 4

7a. Describe the way object-oriented systems approach accommodates changes to existing systems compared to functional approach. Make use of any example if required.

[2] [2] [1] [7]

7b. Discuss the traditional software testing process model with block diagram. Explain the three types of testing phases involved.

[2] [1] [1] [6]

7c. Define 'Design Model'. Classify and explain the design models using UML.

[2] [2] [1] [7]

OR

8a. Classify and explain the objectives of 3 types of testing used in 'Development Testing'.

[2] [2] [2] [8]

8b. Elaborate on 'System Context and Interactions' involved during system design.

[2] [1] [1] [6]

8c. Illustrate 'Input-Output model' of software testing with explanation for verification, validation, software purposes and user requirements.

[3] [2] [2] [6]

## MODULE 5

9a. Show the 3 principle concerns of quality management with software development by a block diagram. List all quality attributes applicable to the software developments with a brief note

[3] [3] [2] [8]

9b. Give the reasons that make software standards are important.

[2] [2] [1] [5]

9c. Describe the ISO 9001 standards framework and its processes imply quality management process.

[2] [2, 3] [2] [7]

OR

10a. Demonstrate the changes incorporated in large software systems, based on changing requirements of an organization with a block diagram

[3] [2] [3] [10]

10b. Show the 'Version Management' use in software industry. Classify and explain the range of features it involves.

[3] [2] [2] [10]

# Fifth Semester B.E. Semester End Examination, Dec/Jan 2018-19
## SOFTWARE ENGINEERING

Time: 3 Hours  Max. Marks: 100

*Instructions:* 1. *Answer any five Full Questions*
2 *Unit – I and Unit V are compulsory units.*

### UNIT – I

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 1 | a. | With neat diagram explain the Water fall model. | (2) | (2) | (1) | (05) |
| | b. | Explain essential attributes of good software and also explain the general issues that affect various types of software? | (2) | (1) | (2) | (07) |
| | c. | List the eight principles to be followed by any software engineer. | (1) | (1) | (2) | (08) |

### UNIT – II

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 2 | a. | Distinguish between plan-driven and agile method. Mention the factors to be considered while choosing between plan-driven and agile method. | (2) | (2) | (1) | (10) |
| | b. | List and explain principles of Extreme programming | (2) | (2) | (1) | (10) |

**OR**

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 3 | a. | List the factors affecting software pricing ? Justify your answer. | (1) | (1) | (1) | (05) |
| | b. | Construct a Bar chart for the given details of tasks, duration and dependencies. | | | | |

| Tasks | Duration(days) | Dependencies |
|---|---|---|
| T1 | 10 | |
| T2 | 15 | T1 |
| T3 | 10 | T1,T2 |
| T4 | 20 | |
| T5 | 10 | |
| T6 | 15 | T3,T4 |
| T7 | 20 | T3 |
| T8 | 35 | T7 |
| T9 | 15 | T6 |
| T10 | 5 | T5,T9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (2) | (1) | (1) | (08) |
| | c. | With a neat diagram explain the project planning process. | (2) | (3) | (3) | (07) |

### UNIT - III

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| 4 | a. | Distinguish between Functional and Non-functional requirements. With a block diagram, explain the types of non-functional requirements. | (4) | (2) | (2) | (10) |
| | b. | Explain the any five Metrics for specifying non-functional requirements? | (2) | (1) | (2) | (05) |
| | | ...users of a requirements document? | | | | (05) |

| | | | L | CO | PO | M |
|---|---|---|---|---|---|---|
| | | **OR** | | | | |
| 5 | a. | Explain the structure of a requirement document. | (2) | (3) | (2) | (07) |
| | b. | Mention the different ways of writing system requirements specification? | (2) | (3) | (2) | (05) |
| | c. | Reliance is planning for an online shopping mart. List and briefly explain the non-functional requirements for the application? | (3) | (2) | (2) | (08) |
| | | **UNIT - IV** | L | CO | PO | M |
| 6 | a. | Using the graphical notation for object classes, design the object classes, identifying attributes and operations for a 'Library System'. Use your own experience to decide on the attributes and operations that should be associated with this. | (5) | (3) | (3) | (07) |
| | b. | Explain the weather station system along with its state diagram. | (2) | (2) | (3) | (07) |
| | c. | Design a high-level architecture of the '*Aadhar* Number generation system'. | (5) | (3) | (3) | (06) |
| | | **OR** | L | CO | PO | M |
| 7. | a. | Mention the two goals of software testing and explain an input-output model for program testing. | (2) | (4) | (3) | (06) |
| | b. | What are the advantages of inspection over testing. Explain the process of software testing with a neat diagram. | (2) | (4) | (3) | (08) |
| | c. | Explain the different types of interface errors and explain any three classes of interface errors. | (2) | (4) | (2) | (06) |
| | | **UNIT -V** | L | CO | PO | M |
| 8 | a. | Explain the ISO 9001 standard framework along with ISO 9001 core processes and its quality management diagram. | (2) | (2) | (3) | (10) |
| | b. | Explain CM (Configuration management) Terminology+. | (2) | (2) | (2) | (10) |

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15CS53/15IS53

# B.E. Fasttrack Semester Examination, July/August 2018

## SOFTWARE ENGINEERING

Time: 3 Hours | Max. Marks: 100

*Instructions:* 1. *UNIT I & III are Compulsory.*
2. *Answer any one full question from remaining each UNITS.*

### UNIT - I

1 a. Describe two major categories of software products and explain the definition of software engineering. **05 M**
( Level [ 2 ], CO [ 1 ], PO [ 1 ] )

b. Explain the different types of applications. **08 M**
( Level [ 2 ], CO [ 1 ], PO [ 1 ] )

c. Explain the waterfall model. **07 M**
( Level [ 2 ], CO [ 2 ], PO [ 3 ] )

### UNIT – II

2 a. List and describe the principles of agile methods **05 M**
( Level [ 2 ], CO [ 2 ], PO [ 2 ] )

b. Discuss the point to decide on balance between plan driven and agile approach. **10 M**
( Level [ 2 ], CO [ 2 ], PO [ 3 ] )

c. What is pair programming and what are the advantages of it. **05 M**
( Level [ 1], CO [ 2 ], PO [ 2] )

**OR**

3 a. What are the factors that affect software pricing. **05 M**
( Level [ 1 ], CO [ 3 ], PO [ 3 ] )

b. Explain project planning process with a neat diagram. **08 M**
( Level [ 2 ], CO [ 3 ], PO [ 3 ] )

c. Discuss the project scheduling process. **07 M**
( Level [ 2 ], CO [ 2 ], PO [ 3 ] )

### UNIT – III

4 a. List out and explain types of non functional requirements. **07 M**
( Level [ 2 ], CO [ 2 ], PO [ 3 ] )

b. Explain the different ways of writing a system requirement specification. **06 M**
( Level [ 2 ], CO [ 3 ], PO [ 2 ] )

c. Explain how to write a structured specification of a requirement for an example of insulin pump system. **07 M**
( Level [ 2 ], CO [ 2 ], PO [ 3 ] )

### UNIT – IV

5 a. What is context and interaction in object oriented design with UML. Explain with an example. **10 M**
( Level [ 2 ], CO [ 4 ], PO [ 2 ] )

b. Explain design models and give a sequence diagram for data collection in weather information system. **10 M**
( Level [ 2 ], CO [ 4 ], PO [ 2 ] )

**OR**

6 a. Explain the interface testing, different interface errors and classes of errors. **10 M**
( Level [ 2 ], CO [ 4 ], PO [ 1 ] )

b. With an example of weather data collection system explain the system testing. **10 M**
( Level [ 2 ], CO [ 3 ], PO [ 2 ] )

## UNIT –V

| | | | | |
|---|---|---|---|---|
| 7 | a. | Why is software standards are important? Explain two software engineering standards for software quality management? | | 05 M |
| | | | ( Level [ 2 ], CO [ 3 ], PO [ 3 ] ) | |
| | b. | Explain ISO9001 and quality management with figure. | | 10 M |
| | | | ( Level [ 2], CO [ 3 ], PO [ 2] ) | |
| | c. | Explain the process based quality with example. | | 05 M |
| | | | ( Level [ 2 ], CO [ 4], PO [ 3] ) | |

**OR**

| | | | | |
|---|---|---|---|---|
| 8 | a. | List and explain configuration management terminology and configuration management activities. | | 10 M |
| | | | ( Level [ 2 ], CO [ 4 ], PO [ 3 ] ) | |
| | b. | With the figure, explain change management process and list out point to be considered for change acceptance. | | 10 M |
| | | | ( Level [ 2 ], CO [ 4 ], PO [ 3] ) | |