

Reg. No. :

**Question Paper Code : 90416**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Fourth/Fifth Semester

Computer Science and Engineering

CS 8494 — SOFTWARE ENGINEERING

(Common to Computer and communication Engineering/Computer Science and Business Systems/ Information Technology)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define software Engineering.
2. What are the key challenges that the faced in software engineering?
3. Differentiate Verification and Validation with suitable examples.
4. Mention the steps involved in requirements elicitation and analysis
5. What is software design?
6. What are the advantages of data centered architecture?
7. Define Regression testing.
8. What is forward engineering?
9. Define Software Risk. Mention the two characteristics of Software Risk.
10. If team A found 342 errors prior to release of software and Team B found 182 errors.

What additional measures and metrics are needed to find out if the teams have removed the errors effectively?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss in brief about the typical activities involved under umbrella activities in software Engineering. (7)
- (ii) State the principles to be followed to achieve agility in software engineering and mention the type of programming that are widely used for agile software development. (6)

Or

- (b) (i) Briefly explain the 12 practices of Extreme Programming. (6)
- (ii) Discuss about the waterfall model and spiral model with its advantage and disadvantage. (7)
12. (a) (i) Illustrate the basic issues in non-functional requirement and how it is more critical than functional requirements. (6)
- (ii) Eliciting and understanding requirements from system stakeholders is a difficult process. Why? (7)

Or

- (b) (i) Write in detail about the various requirement gathering techniques. (7)
- (ii) Write short notes on Petrinets. (6)
13. (a) Explain the three golden rules of Theo Mandel in user interface design. (13)

Or

- (b) Describe the concept of cohesion and coupling. State the difference b/w cohesion and coupling with a suitable example. (13)
14. (a) Differentiate The Internal And External Views of Testing. (13)

Or

- (b) (i) Discuss about the Integration technique with suitable example. (7)
- (ii) Discuss in detail about the five steps involved in Business Process Reengineering. (6)

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15. (a) Describe in detail about the Activities for Risk Management. (13)

Or

- (b) (i) Explain the merits and Demerits of Delphi method. (5)  
(ii) Discuss about the basic COCOMO model with its advantages and limitations. (8)

PART C — (1 × 15 = 15 marks)

(Question 16 is compulsory)

16. (a) You are asked by your manager to deliver software to a schedule which you know can only be met by asking your project team to work unpaid overtime. Discuss whether you should accept this demand from your manager or whether you should persuade your team to give their time to the organization rather than their families. What factors might be significant in your decision? (15)

Or

- (b) (i) Draw the Activity diagram and the Swimlane diagram for the given scenario (5)

| Primary actor | Home owner   |
|---------------|--|
| Goal:         | To view output of camera placed throughout the house from any remote location via the Internet.  |
| Preconditions | System must be fully configured; appropriate user ID and passwords must be obtained.   |
| Trigger       | The homeowner decides to take a look inside the house while away   |
| Action:       | <ol style="list-style-type: none"> <li>1. The homeowner logs onto the <i>SafeHome Products</i> website.</li> <li>2. The homeowner enters his or her user ID.</li> <li>3. The homeowner enters two passwords (each at least eight characters in length).</li> <li>4. The system displays all major function buttons.</li> <li>5. The homeowner selects the "surveillance" from the major function buttons.</li> <li>6. The homeowner selects "pick a camera."</li> <li>7. The system displays the floor plan of the house.</li> <li>8. The homeowner selects a camera icon from the floor plan.</li> <li>9. The homeowner selects the "view" button.</li> <li>10. The system displays a viewing window that is identified by the camera ID.</li> <li>11. The system displays video output within the viewing window at one frame per second.</li> </ol> |
| Exceptions:   | <ol style="list-style-type: none"> <li>1. ID or passwords are incorrect or not recognized</li> <li>2. Surveillance function not configured.</li> <li>3. A floor plan is not available or has not been configured</li> </ol>  |

(ii) Consider an ABC project with some important modules such as

- (1) User interface controls
- (2) 2D Graphics analysis
- (3) 3D Graphics analysis
- (4) Database Management
- (5) Computer Graphics and Display Facility
- (6) Peripheral Control Function
- (7) Design analysis models

Estimate the project based on LOC. (10)

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