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## SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

### FIFTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022 COMPUTER SCIENCE AND ENGINEERING (2020 SCHEME)

Course Code : 20CST309

Course Name: Management of Software Systems

Max. Marks : 100

Duration: 3 Hours

#### PART A

*(Answer all questions. Each question carries 3 marks)*

1. What are the fundamental activities in software engineering development?
2. Professional software engineers shall adhere to Code of Ethics and Professional Practice. Why?
3. Differentiate between functional and non-functional requirements in software system requirements.
4. What is the significance of Requirement Traceability Matrix (RTM) in requirement analysis?
5. Differentiate between GPL and LGPL.
6. Do DevOps help in building better products faster for a better customer satisfaction? Justify.
7. Mention any 3 stages in Risk Management Process in software project management.
8. How is agile planning differing from traditional software planning?
9. Discuss Software Quality Dilemma.
10. Explain the role of CMMI in Process Improvement.

#### PART B

*(Answer one full question from each module, each question carries 14 marks)*

##### MODULE I

11. a) A public library is considering the implementation of a computer-based system to help administer at library. Explain this software development process using waterfall model. (10)  
b) Compare verification Vs. validation (V&V) in the context of library management software system. (4)

#### OR

12. a) The *Mentcare* system is a patient information system to support mental health care, that is intended for use in clinics. Explain Boehm's spiral model in the context of developing *Mentacare*. (10)

- b) Describe Agile software development method. (4)

**MODULE II**

13. a) Describe the importance of component validation in the context of *Ariane 5 launcher failure* (8)  
b) Discuss Design Process, Concepts and models in the context of software design (6)

**OR**

14. a) List and discuss the three main activities in requirements engineering process using a diagram (8)  
b) How do you model the interaction between users and system graphically? (6)

**MODULE III**

15. a) Why is software testing important? List and explain any three software testing strategies. (8)  
b) Discuss the three parts in an automated testing environment using test automation process (6)

**OR**

16. a) Assume that the *Mentcare* system is being developed using an object-oriented design approach. Explain UML in this context. Draw and explain using a use case diagram. (8)  
b) Differentiate debugging Vs. Testing. (6)

**MODULE IV**

17. a) Define the mechanism of cost estimation for a Software project. Explain the COCOMO model. (9)  
b) Mention the importance of software project management in comparison with individual programming. (5)

**OR**

18. a) Compare Kanban Methodology and Lean Approaches (6)  
b) Discuss any four extreme programming practices in agile methodology. (8)

**MODULE V**

19. a) Explain elements of Software Quality Assurance and SQA Tasks. (8)  
b) Illustrate SPI process with an example. (6)

**OR**

20. a) Discuss in detail about microservices, its architecture and development. (9)  
b) What is Software as a Service? (5)

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