

Indian Institute of Technology Roorkee

Department of Computer Science and Engineering

Mid-Term Exam, Session: Jan, 2024-May, 2024

Subject code: CSN-254

Course Title: Software Engineering

Max Marks: 25

Time Allowed: 1.5 Hour

Note: 1. Attempt ALL questions.

2. Attempt all parts of a question together. Attempt questions in the same order as given in the question paper.

3. In addition to correctness of answer, the quality of the answer will also be considered during evaluation.

Question-1

(4*2 Marks = 8 Marks)

Consider various standards and concepts of Software Engineering and answer the following questions. Your answer should be supported by proper justification quoting various applicable Software Engineering principles. Answer without justification will be awarded zero marks.

- i) With increasing size of software project, the number of variable to remember during the development increases. It can be handled by using principles of and of Software Engineering. (Fill in the blanks and explain)
- ii) Out of incremental software development model and evolutionary software development model, model takes care of the unpredictable feature discovery and feature change in better way. Take appropriate example to explain your answer. (Fill in the blanks and explain with example)
- iii) In exploratory style of development, as the size of project increases, the development cost increases in the same ratio. (State True/False along with justification)
- iv) With reference to Software crisis, the ratio of hardware cost/software cost is with maturity in software industry from years to years. options: increasing/decreasing/constant (Fill in the blanks and explain with the help of corresponding diagram)

Question-2

(2+2+2+2 = 8 Marks)

- i) From a given problem description and requirements specification document, what artifacts will you try to identify if you plan to build a data-flow oriented design? Take appropriate example to explain your answer.

- ii) Suppose you have an innovative idea for a software product that you want to develop and launch in the open market for anyone to purchase. **Specify** and **explain** at least one method using which you will gather the requirements for developing this product.
- iii) During the structured design, specify the **main two deliverables each** from the following sub-phases:
 - a. software architecture design sub-phase
 - b. detailed design (or low-level design) sub-phase
- (iv) Suppose you plan to undertake the development of a product beset with a large number of technical as well as customer related risks. However, from your experiences with developing similar products you can anticipate all the risks that you might suffer from. Out of traditional life cycle models, **which more is most appropriate** to use as per software engineering principles? **Justify** your answer.

Question-3

- (a) Suppose the software company that you joined is ranked at CMM Level-3. **List down the two main features** of its working environment which are revealed to you from its ranking. Consider that you are given the responsibility to lead a team that will do the efforts to move the ranking of this company to CMM Level-4. **List down the two key performance indicators** where company need to improve to be ranked at CMM Level-4. (1+2=3 Marks)
 - (b) **Which** development practice in extreme programming has taken the testing activity of traditional life cycle models to its 'extreme'? Also **explain** that development practice. (2 Marks)
 - (c) **List down and explain** the steps to calculate function point metric showing various formula used at each step. (2 Marks)
 - (d) With reference to extreme programming in agile development environment, **explain** the concept of 'refactoring' and its **use** in extreme programming using appropriate **example**. (2 Marks)
-