true that whenever you increase the cohesion of different modules in your design coupling among these nodules automatically decreases? justify. 4

(c) Is it possible to test all paths in a program? Justify. 1

7. (a) What are the important types of risks that a project might suffer from? Explain how risk assessment and containment are a part of risk management of a software project. 6

(b) Differentiate between expert judgement technique and Delphi cost estimation. 4

8. (a) Why is software reliability difficult to measure? Explain how hardware reliability is different from software reliability. 2+3

(b) Why do you need sliding window planning to plan a project. What is the primary estimation that is needed to plan a project also mention how these estimations are done. 5

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B.Tech Even Semester Examination, May, 2025

Computer Science & Engineering

(8th Semester)

Course No: CSE-803 (15) (Open)

(Software Engineering)

Full Marks: 50

Pass Marks: 15

Time: 2 hours

Note:

1. Attempt any five questions.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. (a) Write the IEEE definition of Software engineering. What is the prime objective of software engineering? 3

(b) Describe the software prototyping also mention how it is useful as a SDLC model. 4

(c) Is requirement gathering a difficult task? If no, justify your reasoning and if yes, suggest some ideas to overcome the difficulties. 3

2. (a) You are responsible for development and implementation of software to be used in all major Railway Stations of our country to assist passengers in inquires related to arrival and departure of train. What software lifecycle process model would you choose

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for developing the software? Give reasons for your selection. 4

(b) Given the customer requirement below, develop a Software Requirement Specification (SRS). Give a name for the software.

The Taj Palace Group of Hotels would like to automate operations of its hotel business and develop a website to serve the needs of its customer.

Customer can book/cancel rooms through the hotel's website. Rooms are of different types (Suite. Deluxe Ale. Double Ale, Single Ale). Availability of rooms on a particular date as well as per day price is given.Customers can book rooms of a particular date with their credit/debit card detail. Rooms can be cancelled before 24 hours of lodging date with minimum charges being deducted. However, rooms cannot be cancelled within 24 hours. Administrators in the hotel can view availability of rooms on a particular date, room booking on that date, as well as generate various reports. 6

3. (a) Draw the decision tree and decision table for the following problem:

The mode of transport for dispatching materials should be selected on the basis of the following:

If the weight of materials is less than or equal to 5 kg, then dispatch by post office. If the weight of the materials is greater than 500 kg and the distance is less than or equal to 250 km, then dispatch by a truck. If the distance less than 50 km and weight is less than 500 kg, then dispatch by a car. In all other cases, use train for dispatching the materials. 6

(b) What is an ER diagram? What are attributes in an ER also mention its types. 1+1+2

4. (a) What is verification and validation? Explain why validation is a particularly difficult process. 4

(b) Differentiate between Top up and Bottom down approach. Which is better? 3

(c) What is a coding standard? Identify the problems that might occur if the engineers of an organization do not adhere to any coding standard? 3

5. (a) What are driver and stub modules in the context of integration and unit testing of a software product? Why are stub and driver modules required? 5

(b) What errors are commonly found during Unit Testing? 1

(c) Your team is developing a safety-critical software system that requires a high level of reliability and thorough testing. The system has complex interactions and dependencies between its components. Which testing approach would you recommend for this project? Provide reasons for your recommendation. 4

6. (a) Define the term couplingalong with its types. 5

(b) How are cohesion and coupling concepts useful at designing a good system? Is it