B.Tech Even Semester Examination, May, 2025

Computer Science & Engineering

(6th Semester)

Course No: CSE-604

(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) What is the prime objective of software engineering? 2

   (b) Describe about modularity in detail and explain its role in structured design. 5

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

(b) The Software Requirement Specification (SRS) of a Location Based Garbage Management System for Smart City. 6

3. (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? Prove it. 3+3=6

4. (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) Define the term cohesion in the context of object-oriented design with an example. 4

5. (a) Explain the different techniques of functional testing. 5

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

(c) What do you understand by encapsulation and abstraction in the context of object orientation? Show with an example how is encapsulation different from abstraction? 4

6. (a) How does data abstraction help in reducing the coupling in a design? 4

(b) How are cohesion and coupling concepts useful at designing a good system? Is it 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. 2

7. (a) What is the role of a project manager in the development of a software product. 3

(b) Differentiate between hardware and software reliability. 3

(c) What are the important types of risks that a project might suffer from? 4

8. (a) Differentiate between expert judgement technique and Delphi cost estimation. 2+3

(b) Explain with proper example, when you should use PERT charts and when you should use Gantt charts while you are performing the duties of a project manager. 5

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