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Roll No. .....

TBC–305/TBI–304

B. C. A./B. SC. (IT)
(THIRD SEMESTER)
END SEMESTER
EXAMINATION, Jan., 2023

SOFTWARE ENGINEERING

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any *two* sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are **twenty**.

(iv) Each sub-question carries 10 marks.

1. (a) Recognize the definition of Software Engineering. Describe various characteristics of a good software. Recall and explain evolving role of a software in business. (CO1)

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(b) Memorize the meaning and importance of requirements gathering. Name and explain the different requirements gathering techniques that are normally deployed by an analyst. (CO1)

(c) The basic goal of the requirements activity is to get an SRS that has some desirable properties. What is the role of modeling in developing such an SRS ? List three major benefits that modeling provides, along with justifications, for achieving the basic goal. (CO1)

2. (a) Illustrate the various problem faced by software engineers in developing a software for a business. Review the software crises, its reasons and possible solutions. (CO2)

(b) Describe Prototype model for software development. In which situation, one should use it ? Discuss the following in relation to Prototype development : (CO2)

(i) Rapid Throwaway Prototyping

(ii) Evolutionary Prototyping

(iii) Incremental Prototyping

(iv) Extreme Prototyping

(c) Differentiate between function-oriented design, and object-oriented design in relation to software system design. Identify various symbols used in DFD. Discuss the various rules for designing a DFD. (CO2)

3. (a) Interpret the following : (CO3)

(i) Encapsulation

(ii) Abstraction

(iii) Links and Association

(iv) Multiplicity

(v) Aggregation

(b) Explain the following : (CO3)

(i) Structured Programming

(ii) Information Hiding

(iii) Programming Style

(c) Interpret the following : (CO3)

(i) Phases in RAD model

(ii) Disadvantages of Waterfall model

(iii) Risk Handling in Spiral model

(iv) Advantages of Spiral model

(v) V-model

4. (a) Classify the types of Cohesion and coupling. Write down the characteristics of a good SRS. (CO4)

(b) Focus on importance of documentation in SDLC. Outline and explain various types of documents prepared in a software development process. (CO4)

(c) Distinguish functional testing and structural testing. Deduce principles through which a software can be tested. Evaluate the following : (CO4)

(i) Unit Testing

(ii) Integration Testing

(iii) System Testing

(iv) Acceptance Testing

5. (a) Judge the importance of software reliability measurement. Summarize the issues related to software reliability measurement. Justify various reliability metrics. (CO5)

(b) Judge various reliability growth modelling techniques ? How one can measure the quality of a software ? Compare ISO and SEI CMM with respect to software reliability assessment. (CO5)

(c) Conclude the following : (CO5)

(i) The management spectrum

(ii) Cost estimation

(iii) Project scheduling

(iv) Computer Aided Software Engineering and its scope

(v) Reverse Software Engineering