Department of Computer Science and Engineering, S V N I T, Surat
MID-SEMESTER EXAMINATIONS, September 2022
B. Tech. – IV (CSE) – 7th Semester
Course: (CS401) Software Engineering

Date: 26th September 2022 **Time: 14:00 to 15:30** **Max Marks: 30**

Each question carries 5 marks. Q.4-a is of 3 marks and Q.4-b is of 2 marks.

Q.1 Answer the following (Any Three): [15]

1. Why do we need to include User and System requirements both in Software Requirement Specification (SRS) document? What are the different users of SRS document and which part of the SRS document they would be interested to read?
2. Consider the following requirement from the MentCare System discussed in class:
   "The system should be easy to use by medical staff and should be organized in such a way that user errors are minimized. "
   Answer the following for the above requirement:
   1) Is this a functional or non-functional requirement? Justify your answer.
   2) Is the above requirement testable? If yes, then state why. If no, convert the above statements into testable requirement statements.
3. (a) Identify five reasons as to why the customer requirements may change after the requirements phase is complete and the SRS document has been signed off.
   (b) What problems would a software development team face if it does not have a documented process model and therefore the project teams follow only informal ones?

4-a For the below software systems, which of the software process model (1) The Waterfall model (2) Incremental Development model (3) Integration and Configuration model; can be used?

1. The software project where customer feedback at intermediate stage is anticipated. Additionally, rapid delivery and deployment is the desirable criteria.
2. Large software project which is developed at several sites and the business requirements of the project are stable.
3. The software project that consists of integration of existing components/packages i.e. Commercial Off-the Shelf (COTS) systems.

4-b Distinguish between a program developed by student and professionally developed software.

Q. 2 Answer the following: [15]

1. One of the important requirements in Operating System Software design is to avoid problems like 'Starvation' and 'Deadlock'. Early detection of such problems in software development life cycle reduces amount of rework in later phases.
   Suggest suitable specification technique for such software system. Show with suitable models/examples how the problems like 'Starvation' and 'Deadlock' can be detected.
2. Draw a labeled Data Flow Diagram model up to level-1 using DeMarco and Yourdan symbols for a student academic management software that should support the following features:
   - Register students to subjects
   - Award marks for subjects
   - Query marks
   - Print report cards
   - Compute statistics of student performance.
3. Consider the following requirements for the electricity bill generation module of a company that supplies electricity to its customers:
   If the customer account is billed using a fixed rate method, a minimum monthly charge is assessed for consumption of less than 100 kwh. Otherwise, apply schedule A rate structure. However, if the account is billed using a variable rate method, schedule A rate structure will apply to consumption below 100 kwh, with additional consumption billed according to schedule B.
   Specify the above requirements using Decision Tree and Decision Table.