



Final Assessment Test (FAT) - July/August 2023

Programme	B.Tech.	Semester	Fall Inter Semester 22-23
Course Title	SOFTWARE ENGINEERING	Course Code	BCSE3011
Faculty Name	Prof. Dhavakumar P	Slot	BI+TH
		Class Nbr	CH2022232501008
Time	3 Hours	Max. Marks	100

Section 1 (10 X 10 Marks)

Answer All questions

01. "XTream Technology Solutions", a product-based company, started up a new venture on developing an AI based spreadsheet system that has core spreadsheet features along with added features focused on intelligence assisted automatic filling of field values, calculations and generating automated reports based on modifications in field values. These advanced features are to be developed based on the basic features which are delivered to the customers as a product version 1.0. Analyse the above scenario and justify which process model may be suitable to develop further improved or enhanced versions. [10]
02. The productivity of a software system is "7" compute Effort using Function Point for a system with the following data: [10]

Parameters	Count	Complexity Values		
		Simple	Average	Complex
Number of user inputs	25 (10 5 10)	3	4	6
Number of user outputs	10 (0 6 4)	4	5	7
Number of user inquiries	5 (0 2 3)	3	4	6
Number of files	5 (0 0 5)	7	10	15
Number of external interfaces	2 (0 1 1)	5	7	10

The complexity factors have the following values in a 3-point scale.
(0-Not applicable; 3- Nominal importance; 5- Absolutely essential)

- a) Backup and recovery - Nominal
- b) Data communication - Absolutely Essential
- c) Distributed processing functions - Not applicable
- d) Is performance critical? - Nominal
- e) Existing operating environment - Not applicable
- f) On-line data entry - Not applicable
- g) Input transaction built over multiple screens - Nominal
- h) Master files updated on-line - Absolutely Essential
- i) Complexity of inputs, outputs, files, inquiries - Nominal
- j) Complexity of processing - Nominal
- k) Code design for re-use - Not applicable
- l) Are conversion/installation included in design? - Absolutely Essential
- m) Multiple installations - Nominal
- n) Application designed to facilitate change by the user - Absolutely Essential.

03. Perform the required "elicitation and validation tasks" to develop a "Real time Patient Monitoring System with wearable medical IoT devices" through agile techniques in order to deliver a failure free operation of the product. [10]

04. Considering a system with the components A, B, C, D, E, and F. As shown below, each component interacts with the other components in various ways. Determine the type of cohesion and coupling between the components and give your reasons for each choice. [10]

- (i) Class A passes its data members to class B through method call.
- (ii) Class B passes an object inside a method which is invoked by class C
- (iii) Both D and E classes shares the same flag that alters the execution flow of class E.
- (iv) Class B passes a control flag that alters the execution flow of Class E
- (v) Class C directly accesses an attribute in class D by creating an object for it.

05. ICICI Bank, one of the leading banks in India, is preparing to launch a new payment app called "EZPay." The app aims to provide a seamless and convenient payment experience for its users. However, during the testing phase, an issue arises when users from multiple regions attempt to log in to the app. The login process fails, leading to frustration among potential users. [10]

(i) Analyse how you would conduct black box testing to ensure the login issue is identified and resolved.

(ii) Identify THREE test scenarios or inputs that you would consider for EZPay and enumerate the steps you would take to prioritize and resolve the login issue.

06. You are working on a team that is developing a new ride sharing app. The app will consist of several components, including a user facing mobile app, a server side API for managing user data and ride requests, and a payment processing system. [10]

- (i) Create a class diagram to illustrate the architecture of the app.
- (ii) Explain the relationship among the various entities using E-R model.

07. (i) Aircraft maintenance software is used in the aviation industry to manage maintenance operations for aircraft, engines, and other aviation-related equipment. Explain how reverse engineering is used to study this application or software to see how it functions and to use that information to develop a similar system? [10]
- (ii) Then identify who are the persons involved in the software configuration management for the above scenario and explain how they control the changes in the documents, codes, and other entities during the Software Development Life Cycle.
08. A project on Hostel management system is planned to be constructed, it serves various features, such that a student can choose the following list of options [10]
- (i) New Registration
 - (ii) Choose the type of room (A/c or non-A/c).
 - (iii) Book rooms
 - (iv) Cancel the room and
 - (v) Do Online payment
- Identify the following for the above said scenario
- a) Scope of the project
 - b) 5 Functional Requirements
 - c) 5 Non-Functional Requirements
 - d) type of flow for the features "book room" and "online payment"
09. An ATM system is being developed with the following features: [10]
- (i) Transfer funds between linked bank accounts.
 - (ii) Receive account balance.
 - (iii) Prints recent transactions list.
 - (iv) Change your pin.
 - (v) Deposit your cash.
 - (vi) Prepaid mobile recharge and
 - (vii) Bill payments.
- Draw the level 0,1 and 2 DFDs for the above scenario.
10. A Software company involving banking application development and support has its major client in the US and wants to arrive at a revised ISO quality policy. Discuss the pros and cons of ISO 9126 model and assist them how well they can use this standard to prepare their policy document. [10]

