Final Assessment Test (FAT) - November/December 2023

Programme	M.C.A.	Semester	FALL SEMESTER 2023 - 24
Course Title	SOFTWARE ENGINEERING	Course Code	PMCA504L
Faculty Name	Prof. Prakash B	Slot	D1+TD1
		Class Nbr	CH2023240101718
Time	3 Hours	Max. Marks	100

Section A (10 X 10 Marks)
Answer all questions

01. **Consider the following scenario to answer the Questions 1-8.** [10]

A leading bank in India is planning to develop and launch a software application called "Payapp" – a complete payment solution, which provides a facility to the customer to make payment in just one click. With this application, customers can make purchases of movie tickets, music and groceries, compare and book flight tickets and hotels, transfer money to the linked bank account, pay bills and recharge their mobile, DTH and data card.

Following are the initial set of services identified for developing the above system.
- Customers should download the app first on their mobile, registered with the bank.
- Register and create a secure password PIN.
- Customers can perform various transactions after linking their debit / credit card successfully.
- Using the app, customers can do online shopping – one click payments on partner apps such as MakeMyTrip.com, Bookmyshow.com, BigBasket and more.
- Customers can get great deals in one platform – Compare and book flight tickets and hotels.
- Instantly customers can send money to anyone in their phone contact or email list.
- Customers can make bill payments anytime from anywhere.
- Customers can recharge their Mobile / DTH / Data card in just one click.

Assume that both customer and development team are new to the development environment due to which customer anticipate possibility of risks involved in the development process. Thus, customer is looking for risk management integrated with the process model
Identify the appropriate software process model to build the above system. Justify your choice with its advantages and limitations.

02. List down and elaborate the five key functional requirements of 'Payapp' system. Also, discuss in detail about the Requirements Engineering process for the 'Payapp' system. [10]

03. Identify the metrics used to determine the design process that are applied to build the 'Payapp' system is good or bad? Elaborate the various types of metrics used for the same. [10]

04. Identify the suitable classes and design a class diagram with appropriate relationships and cardinalities for the 'Payapp' system. [10]

05. Identify the objects and draw an activity diagram of ticket booking process in Bookmyshow.com. [10]

06. As part of the design process, suggest a suitable architectural style for developing the above system (2 Marks). Elaborate the chosen design model with proper justification (8 Marks). [10]

07. Create a test cases (at least 2 positive and 2 negative) for 'bill payment' process in the 'Payapp' system. [10]

08. Elaborate the SCRUM process lifecycle that are used to develop the 'Payapp' system. [10]

09. After working for five years at Blue Soft Technologies as a project lead, you have taken up a role of a project manager for an upcoming, high priority, high profile file sharing project for a mobile platform. Being a project manager, how would you ensure the quality of the process? (2 Marks). Elaborate the different types of process improvement models widely adopted among industries (8 Marks). [10]

10. Write a program (C, C++, Java or Python) to sort an element in an array. Define the test data and determine the statement, branch, and decision coverage for the above program. (5 Marks) [10]
Note:
The program should not use any built-in function for sorting.
Also, Construct a control flow graph for the above code. Calculate the complexity of the code using Cyclomatic complexity. (5 Marks)

⇔⇔⇔