Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
Second Semester 2023-2024

Mid-Semester Test
(EC-2 Regular)

Course No.   : SE ZG544
Course Title   : Agile Software Processes
Nature of Exam   : Closed Book
Weightage   : 35%
Duration   : 2 Hours
Date of Exam   : 16/03/2024 (AN)

No. of Pages   = 2
No. of Questions = 7

Note to Students:
1.   Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2.   All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3.   Assumptions made if any, should be stated clearly at the beginning of your answer.

Q.1   In project management, projects are characterized by two fundamental components: the goal and the solution. These components can be classified into two states each: clear and complete, or not clear and incomplete. When combining these states, a four-quadrant matrix emerges, delineating four distinct project categories.   [1+4]

   Q. 1.1   What are the four project categories delineated by this matrix?
   Q. 1.2   Subsequently, propose suitable project life cycle methodologies for each project category and provide a rationale for your selections.

Q.2   Imagine you are tasked with developing a three-tier web application for an order entry system. The architecture consists of Tier-1, which comprises the web browser; Tier-2, the application server; and Tier-3, the Database server.

   The application's functions are distributed across the tiers as follows:
   Tier-1 supports Create Order, Display Orders, Update Orders, and Cancel Orders.
   Tier-2 is responsible for passing client requests to the Database server.
   Tier-3 handles reading orders, inserting orders, updating orders, and deleting orders from the database.

   To develop this application in an Agile manner, you need to organize the work into three sets to showcase the functionality of all three tiers. What sequence of supported functions will you prioritize across the three tiers in your development process?   [5]

Q.3   A project aimed to develop an online drug store targeting primarily Indian customers for the sale of cheaper prescription drugs. Throughout the project, requirements fluctuated significantly, with major changes occurring on a weekly basis. The business conducts an evaluation to determine the most appropriate project life cycle for completing this initiative. The project's attributes and evaluation scores are outlined as follows:
   - Experience: 2

- Access: 2
- Buy-in: 3
- Trust: 2
- Decision-making: 1
- Delivery: 1
- Criticality: 6
- Changes: 1
- Team size: 1

Q. 3.1 Create a rough illustration of a Project Life Cycle suitability evaluation chart based on the provided attributes and scores.

Q. 3.2 Additionally, recommend a project life cycle model tailored to this project's requirements. Justify your choice based on the evaluation scores and project characteristics. [3+2]

Q.4 For any given length of your Sprints, you allocate an EQUAL amount of time per week for Scrum meetings, calculated as the Total time of a sprint divided by the Sum of all meeting time. Can you provide examples to illustrate this principle for sprint durations of one, two, three, and four weeks? [5]

Q.5 [3+2]

Q. 5.1 Create three child user stories from the following Epic user story:
As a traveler, I want to be able to save favorites on my mobile weather so I can choose from a finite drop-down list to easily locate the weather in the destination I am traveling to.

Q. 5.2 Choose one of the child user stories that you just created and write two acceptance criteria for it.

Q.6 List and explain briefly at least two commonly used XP work practices in each of the following categories. [2+3]
1.Requirements practices
2.Team/Organization practices
3.Software Development practices
4.Integration Testing and release practices

Q.7 [2+3]

Q. 7.1 Suppose a software development team is using the Fibonacci sequence (1, 2, 3, 5, 8, 13, etc.) for estimating user stories in terms of story points. The team has completed five user stories with the following story point estimates: 3, 5, 8, 13, and 21.
a) Calculate the average story point estimate for the completed user stories.
b) Now, the team estimates a new user story to be between the sizes of 5 and 8 story points. How would you determine the most appropriate story point estimate for this new user story using the team's historical data and estimation scale?

Q. 7.2 Define the core principles and practices of Kanban within the context of software development. Explain how Kanban differs from traditional Agile methodologies such as Scrum and how it facilitates continuous delivery and workflow optimization in software development teams.