Birla Institute of Technology & Science, Palani
Work Integrated Learning Programmers Division
Second Semester 2022-2023

Mid-Semester Test
(EC-2 Regular)

Course No.	: SE ZG544
Course Title	: Agile Software Process
Nature of Exam	: Open Book
Weightage	: 30%
Duration	: 2 Hours
Date of Exam	: 11/03/2023 (AN)

No. of Pages = 5
No. of Questions = 24

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 Set. (A) Determine which quadrant of the Stacey complexity model best fits the following situations. Select a project lifecycle methodology (Predictive, Agile, Hybrid) more suitable for the situation. [4]

1. Rapid deliverables
2. Project with medium risk and low degree of uncertainty, Standard procedure exists.
3.Organizations with multiple active projects ranging from small to large in magnitude.
4. Nature of the project work does not allow for incremental delivery
5. Projects that have compliance or regulatory needs with well-defined deliverables
6. Uncertain, evolving, or emerging requirements
7. Far from Agreement and far from certainty
8.. Research and development are required

Q.1 Set. (B) Consider the following examples. Each situation's key characteristics are listed below. Determine which context in the Cynin framework is best suited to each situation and recommend a suitable strategy for dealing with it. [4]

1.Repeating patterns and consistent events.
2. Events and patterns are more complicated
3.Lots of flux and unpredictability in events.
4. Highly turbulent
6. No clear cause- and-effect relationship, but instructive patterns can emerge.
7. No clear cause-and-effect relationship; no instructive patterns.
8. Known knowns. Right answer exists.

Q.1 Set. (C) Some of the tasks listed below can be handled more effectively with a predictive or adaptive approach. Determine the best approach for the following tasks. [4]

Explain briefly how you arrived at this conclusion.

1. constructing a bridge across a river
2. In a quiz competition, use serious hints to help you answer the questions.
3. Creating a series of clues to assist the contestants in a quiz
4. Attempting to locate a specific location using a navigation system or Google Maps.

Q.2 Set. (A) [4]

Q. 3.1 Consider a scenario in which your employer refers to you as an "asset," but their actions are consistent with this philosophy. For software development, this business employs the traditional waterfall model with one pass. Which of the four agile values are violated by that model and that business?

Q. 3.2 Indicate whether the following items describe the predictive, iterative, incremental, or agile approaches.

1. Features are released as soon as they are useful. Over time, existing features are improved, and new features are added.
2. Features are released one at a time with full fidelity.
3. All the application's features are released at the same time with full fidelity.
4. Every feature is released quickly with low fidelity and then improved over time.

Q.2 Set. (B) Which aspects of each of the 12 Agile principles most closely align with the one-pass Waterfall Development paradigm, and which aspects contradict with it? [4]

Q.2 Set. (C) Which aspects of each of the 12 Agile principles most closely align with the Incremental Development paradigm, and which aspects contradict with it? [4]

Q.3 Set. (A) The following principles can be used to characterize Agile Philosophy. Explain each of these concepts briefly in the context of agile project development. [4]

1. Redefined roles for developers, managers and customers.
2 No "Big Upfront" steps.
3 Iterative developments.
4 Limited negotiated functionality.
5 Focus on quality, understood as achieved through testing.

Q.3 Set. (B) Name four Agile: [4]

1. Roles
2. Project Management Practices
3. Technical Practices
4. Artifacts

Give a brief description of any one practice and any one artifact.

Q.3 Set. (C) [4]

Q. 4.1 List at least three factors that contribute to Agile development being minimalistic: What are they, and can you explain each one briefly?

Q. 4.2 List three organizational practices for Agile teams and three technical practices. Briefly describe any two practices.

Q.4 Set. (A) The first principle emphasizes "early and continuous delivery of valuable software.". What are the two main goals of this principle? What occurs in the case of a Waterfall project? [2]

Q.4 Set. (B) "At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly," emphasizes one of the Agile principles. Agile is adaptable in two different ways.
Which of those are they? [2]

Q.4 Set. (C) The Scrum Master is the Scrum Team's servant-leader. How does Scrum master assist the development team, product owner, and organization? [2]

Q.5 Set. (A) Kris is an agile team member and a quick learner. His team consists of four individuals. He has just completed five days into a two-week sprint. On day 5, he finished work on "User Story 1," the highest priority story in a five-story sprint backlog. “User Story 2” and “User Story 3” are still in the “In Progress” state on day 5. The status of “Story 4” and “Story 5” is “To Do.” [4]
Note: If you are unable to draw a task board, simply indicate the heading for column 1, column 2, and so on.

Q. 5.1 Create a task board that depicts the board’s status at start of day1 and its current state (Day5)?

Q. 5.2 What is Krish's next option? What is the best course of action for him?

Q.5 Set. (B) Agile initiatives result in high-quality products that are well-managed due to early problem detection and resolution. Determine and briefly explain at least four tools, practices, or strategies that can help the team detect problems sooner and produce high-quality work. [4]

Q.5 Set. (C) An Agile team used planning poker to determine the story point values listed below for their stack-ranked backlog: Using the Velocity Multiplier Matrix from the course, how many additional maximum and minimum sprints are needed to finish the product backlog? [4]

Stories	Story Points
Story-2	5
Story-3	3
Story-4	5
Story-5	13
Story-6	5
Story-7	2

Sprint	Historical Velocity
Sprint-1	12
Sprint-2	16
Sprint-3	18
Sprint-4	21
-	-
-	-

Story-8	1	-	-

Iterations Completed	Low Multiplier	High Multiplier
1	0.6	1.60
2	0.8	1.25
3	0.85	1.15
4 or more	0.90	1.10

Q.6 Set. (A) The Value Stream Map (VSM) for the current state of the process can be found in the table below. Calculate the current state's lead-time, cycle time, and process efficiency. What steps would you take to improve the process? [4]

Activities	**Value**	**Waste**
Request	5 minutes	
E-mail supervisor		15 minutes
Approve	5 minutes	
E-mail to tech-lead	2 hours	
Assign team		1 hour
Code and test	4 hours	
To verification		30 minutes
Verify	1 hour	
To operations		30 minutes
Deploy	1 hour	

Q.6 Set. (B) The Value Stream Map (VSM) for the current state of the process can be found in the table below. Calculate the efficiency of each process phase as well as the overall efficiency? [4]

Q.6 Set. (C) An UI component software implementation project consists of Step-1, Step-2 and Step-3. Due to the internal process complexity, each process computational step is preceded by wait time. Following table shows the current state of the project. Consider 1 week = 5 working days. The team optimized the process and reduced the wait time to 2 days for step-2 and 1 day for step-3.
Based on the above value stream map calculate the lead-time, cycle time and process efficiency for the current state and future state. [4]

Process Steps	Wait time	Process time
Step-1 -UI spec. document	0hrs	2weeks
Step-2 - (Approve UI Spec.)	5days	2 days
Step-3-(Start building UI)	2 days	5 days

Q.7 Set. (A) [4]

Q. 7.1 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. 7.2 Choose one of the child user stories that you just created and write an acceptance criteria for it.

Q.7 Set. (B) [4]

Q. 7.1 Create three child user stories from the following Epic user story
As a VP Marketing, I want to review the performance of historical promotional campaigns so that I can identify and repeat profitable campaigns.

Q. 7.2 Choose one of the child user stories that you just created and write an acceptance criteria for it.

Q.7 Set. (C) [4]

Q. 7.1 Create three child user stories from the following Epic user story:
As a Job Seeker, I can search for open jobs so that I can apply for them.

Q. 7.2 Choose one of the child user stories that you just created and write an acceptance criteria for it.

Q.8 Set. (A) Product owner of Alpha systems has a list of prioritized 100 user stories to be developed. He asked the team to follow the scrum model and deliver the products in 14 weeks including 2 weeks for production release. Team estimated that 100 user stories are equivalent to 120 story points. The productivity of the team is 20 story points per iteration. [4]

Q. 8.1 Calculate the sprint length?

Q. 8.2 Who is responsible for prioritizing the user stories?

Q. 8.3 What does the team do before the iteration begins and after it ends?

Q.8 Set. (B) [4]

Q. 8.1 The Agile Manifesto is useful because it helps get into a mindset where concepts like the last responsible moment really make sense. One of the twelve Agile Manifesto principles is especially helpful for understanding the last responsible moment. Write down which one you think it is?

Q. 8.2 Match the lean software development principle to the following statement.

1. Refactor the code
2. Conduct Value Stream Mapping
3. Motivate the team
4. Make a decision

Q.8 Set. (C) A team is new to Agile Development. As a consultant, you are asked to suggest a flow based agile-lean development model for a production support project. The team has 2 business analysts, 3 developers, and 2 testers. [4]

Q. 8.1 What distinguishes flow-based Agile from Scrum?

Q. 8.2 What is the lean software development approach, like flow base agile, that we discussed in the course? How many work items can you initially assign to business analysts, developers, and testers?