Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
Second Semester 2021-2022

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	: 12/03/2022 AN

No. of Pages = 6
No. of Questions = 27

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) What are the three main characteristics of agile software development? In What ways does agile software development differ from other software development approaches? [2]

Q.1 Set. (B) When did the agile approach emerge? What was the background of its emergence and evolution? [2]

Q.1 Set. (C) What could happen if a bug not planned for arises in development using a traditional methodology? [2]

Q.2 Set. (A) Map the following Typical tasks / challenges mapped to Cynefin domain: [4]

1. No release deadline
2. Monitoring time spent in phase
3. Ambitious timeline
4. Checking for coding standard
5. Project scope too large
6. Task estimation
7. Retrospectives without consequence
8. Fixing a Build

Q.2 Set. (B) Map the following Typical tasks / challenges mapped to Cynefin domain: [4]

1. Reproducing a clearly defined widget
2. Sentiment analysis and product rating
3. There is a fire in the theater and we need to get out
4. Choosing the wrong tools and taking the wrong actions.
5. Building a house
6. Changing requirements
7. Knowing when a task is done

8. Lack of trust

Q.2 Set. (C) The causality of issues that may develop during the operation of IOT (Internet of Things) systems is mapped onto the Cynefin framework. Based on the examples below, classify IoT systems into the relevant Cynefin domain. [4]

1. Causality becomes unpredictable
2. Causality is straightforward
3. Causality of issues of the IoT is analyzed based on Artificial Intelligence or machine learning algorithm
4. The System or Parts of the system fail with potential increasing damage to the environment it is operating in.

Q.3 Set. (A) Explain how each of the Agile practices listed below supports the following Agile Software Development perspectives (A,B,C). [4]

A. Human: Cognition and social aspects
B. Organizational: managerial , cultural and process considerations
C. Technological: Practical, technical and product considerations

Agile Practices:

1. Whole team
2. Short releases
3. Time estimations
4. Measures
5. Customer collaboration
6. Test-driven development
7. Pair programming
8. Refactoring

Q.3 Set. (B) What exactly is a self-organizing team? In what ways does self-organization change the day-to-day life of a developer?Give three explanations. [1+3]

Q.3 Set. (C)

Agile Principles
P1:Satisfy Customer, P2: Welcome Change, P3: Deliver Frequently, P4:Collaborate Daily, P5:Motivated Individuals and Trust, P6: Face to Face conversation, P7:Working Software, P8:Sustainable Development, P9:Continuous Attention; P10:Simplicity, P11:Self-Organizing, P12:Reflect and Adjust

Q.1.1 Explain how each Agile practice supports one or more Agile Values, Empirical Control Process and Agile principles for each of the Agile practices listed below. Write down the matching Agile value and Empirical control process; however, you do not need to write down the entire principle for Agile principles; instead, use the above labels P1 to P12 to signify the 12 Agile principles. [4]

1. Whole team
2. Short releases
3. Time estimations
4. Measures

5. Customer collaboration
6. Test-driven development
7. Pair programming
8. Refactoring

Q.4 Set. (A) Specify the key issues you face based on your current experience with software development. Will following the Agile techniques help you solve your problem? [2]

Q.4 Set. (B) Given one reason why some software products, such as VisiCalc, which was very popular when it was first released, did not survive in the market? [2]

Q.4 Set. (C) In the 2007 "State of Agile Development" survey1 conducted by VersionOne and the Agile Alliance, 60% of respondents predicted a 25% or greater improvement in time-to-market. Explain how Agile practices could have aided in the reduction of time-to-market. [2]

Q.5 Set. (A) Some of the time-related issues associated with software development are as follows:

1. Bottlenecks. 2. Project planning and schedule. 3. Time estimation.
4. Time pressure.5. Late delivery.

For each of the above problems, specify how agile software development methods attempt to overcome it in general and, in particular, what agile practice(s) aims at solving it. [4]

Q.5 Set. (B) Consider the years when the Internet was just getting started and many businesses were getting online.Banks are beginning to consider if they could provide online access to their business customers. One bank considers two strategies.

(A) The bank's IT director suggests that they put together a quick and dirty Web site that allows customers to submit transactions through their browser, to get this up and running, and to try to develop a connection with the "Back-office" legacy mainframe database system.

(B) The bank also gets a report from some outside consultants that suggests they should reengineer the legacy back-end and build an integrated Web frontend to provide a powerful, user-friendly e-banking system engineered to a high standard.

What are the advantages and disadvantages of each strategy? Which strategy would be best at the time, and why? [4]

Q.5 Set. (C) As an Agile Consultant, how do you deal with or plan for these Project situations? [2+2]

Q.1.1 Your team is in trouble. The client has not been in touch with her feedback on the proposed system. She doesn't have much IT experience and only has a rather vague idea of what she wants. There are no similar systems known to you that you can show her. You need to start getting some requirements identified and some initial stories prepared.

Q.1.2 Your project includes domain experts and technologists, as well as programming in a language that only one member of your team is familiar with. Three others have a rudimentary understanding of the language but have never written anything significant in it.

Q.6 Set. (A) The original system is very poorly written, has slow performance, a poorly structured database, code that is all over the place, and will be a nightmare to maintain. There is a pressing need to create a new system, and you must persuade the business team to fund it.
Should you carefully document the system's functionality and begin reengineering it before adding new functionality? What should your strategy be? [2]

Q.6 Set. (B) If someone in your team put forth one of the following claims regarding refactoring, how would you answer him or her? [2]

1. "I'm paid to write new, revenue-generating features."
2. "Refactoring is an overhead activity."
3. "It is hard for me to see the benefits of refactoring."

Q.6 Set. (C) As an Agile Consultant, how do you deal with or plan for these Project situations? An e-commerce system was commissioned by a local retailer. This was successfully completed and installed. One of the sales assistants was assigned the task of printing out Internet orders and processing them through the orders system at the end of their shift. This worked well at first, as the number of orders increased gradually. After a few months of steady growth, the sales figures for orders placed via the Web abruptly dropped. [2]

Q.7 Set. (A)

Q.1.1 During an estimating meeting five programmers are estimating a story. Individually they estimate the story at two, four and five story points. Which estimate should they use? [2]

Q.1.2 A group of people is gathering to estimate user stories and arrange them on the wall according to their size. What method is the team attempting to employ? What is the goal/purpose of this technique? [2]

Q.7 Set. (B) Determine the velocity of each iteration in the table below. [4]

	Iteration-1	Iteration-2	Iteration-3
Story points at start of iteration	100		
Completed during iteration	35	40	36
Changed estimates	5	-5	0
Story points from new stories	6	3	

Q.7 Set. (C)

User Story-1; Story Points= 8; Value Point=55	User Story-2; Story Points= 3; Value Point=13
User Story-3; Story Points= 8; Value Point=21	User Story-4; Story Points= 5; Value Point=55
User Story-5; Story Points= 2; Value Point=8	User Story-6; Story Points= 13; Value Point

The team velocity is 13 and the iteration length is 2 weeks. Which user stories will be targeted for the next iteration? The customer desired that releases be made after every

second iteration. This project begins on March 15, 22? What is the anticipated deadline for the final release? [2+2]

Q.8 Set. (A) Here are the velocities of two teams working on the same type of project in nearly identical environments and with nearly identical resources.

Iteration	1	2	3	4	5	6	7
Team-1	8	20	18	14	16	24	19
Team-2	5	11	6	12	14	29	24

Consider team-1's iteration-1 velocity as an outlier. Determine the velocity of team-1.Calculate team 2's velocity using "yesterday's weather" and only the last two sprints. Which team is the most productive? What are some of the possible causes for Team 1's velocity to drop to 10 on the next sprint? [2]

Q.8 Set. (B) Here are some excerpts from user stories. Using Story points, size them appropriately. Your assumptions should be listed.

1. Migrate a legacy datastore to a new database technology.
2. Add a text field to the form.
3. User Id validation and storage to the form.
4. Data is retrieved using a third-party API that has been integrated.
5. Redesign a web application's layout
6. Migrate from a complex form to a new form in stages.

The team's velocity over the last three iterations has been: 20,25,28 story points. How long will it take the team to complete the first four stories? [2]

Q.8 Set. (C) In their most recent two-week iteration, Team-A completed 43 story points. Team-B is working on a different project and has twice the number of developers as Team A. In their most recent two-week iteration, they also completed 43 story points. How is that possible?
Can we conclude that Team A is more productive than Team B? [2]

Q.9 Set. (A) An Agile team is working on improving the SLA for level-1 tickets in the production support system of an e-commerce site. Currently, Level-1 tickets take approximately 6 weeks to deploy in production.

Q.1.1 Determine two lean software development approaches that the team can employ to improve the process.

Q.1.2 Briefly describe the steps involved in both approaches. [2+4]

Q.9 Set. (B) A team spent 10 days designing a feature and 15 days coding it. The team distributed the design documents and code and had them reviewed by a few experts. The review took 40 hours because the reviewers requested clarifications back and forth. It took two days to incorporate the review. During the review, the team's productivity was 50% of the review effort.. 1day= 8 working hours. [2+4]

Q.1.1 To improve the review process, propose a process improvement step.

Q.1.2 Assume that your process improvements resulted in a 40% reduction in review effort and a 1 day reduction in review incorporation. Can you create a value stream map of this process before and after the improvement? How much has overall efficiency increased?

Q.9 Set. (C) A team consists of two business analysts, four developers, and three testers. Business Request, Scheduled, Building, Testing, Business Review, Ready for Release are the process steps for delivering work items. [2+3+1]

Q.1.1 Create a visual representation of this workflow

Q.1.2 After a few weeks of implementing Kanban, you discovered that there are ten work items in the testing phase and one in the business review phase. This situation has been going on for a month. What could be the problem, and what can you do to solve it?

Q.1.3 To begin, what WIP limit will you set?

Check List

Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division
Second Semester 2021-2022
Proofreading and Checking of Question Papers

Course Number : SE ZG 544_____

Course Title :___Agile Software Process_____

Please check and verify to ensure that the question papers are good, correct and complete in all aspects such as:

S.No.	Particulars	YES	NO
1	All questions are well within the syllabus prescribed for the evaluation component according to the Plan of Self-Study given in the course handout. No question is outside the prescribed syllabus.	Yes	
2	Balanced coverage of the topics given in the prescribed syllabus for the evaluation component.	Yes	
3	All Questions are appropriate for the type of evaluation component	Yes	
4	Appropriate weightage for each question or part(s) thereof is provided.	Yes	
5	There are no spelling or grammatical mistakes or typographical errors.	Yes	
6	Numbering of questions and the parts thereof are correct.	Yes	
7	Figures / tables / mathematical symbols / data for questions are provided.	Yes	
8	The total marks of the question paper is exactly the same as the maximum marks for the evaluation component.	Yes	
9	Specific instructions are provided wherever applicable.	Yes	
10	There are no objective type or multiple choice type questions or options among questions.	Yes	

Evaluation Component Mid-Semester Test
(Regular)

I have carefully checked the above mentioned question paper based on the guidelines given above and certify that the question paper is correct and complete in all respects. I also confirm that the complete solutions with detailed marking scheme have been prepared.

Instructor's Name : _____K.Anantharaman_____

Instructor's Signature ___K. Anantharaman_____

Date :24-2-2022