UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2022 – 2nd Year Examination – Semester 4

IT4406 – Agile Software Development
Part 2 - Structured Question Paper

(ONE HOUR)

To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **2 questions** and **8 pages**.
- **Answer all questions.** All questions carry **equal** marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.
- All kinds of electronic devices including calculators are **not** allowed.
- *All Rights Reserved.*

Questions Answered

Indicate by a cross (✗), (e.g. ✗) the numbers of the questions answered.

	Question numbers		
To be completed by the candidate by marking a cross (✗).	1	2	
To be completed by the examiners:			

1) (a) List two (02) *Agile Frameworks*.

(04 marks)

ANSWER IN THIS BOX

SCRUM, XP, Kanban, Lean (Similar Answer)

(b) List three (03) types of *Success focuses in Agile Development*.

(06 marks)

ANSWER IN THIS BOX

Personal successes

Technical successes

Organizational successes

(c) What is meant by '*Velocity'* in Scrum?

(04 marks)

ANSWER IN THIS BOX

A measure of the rate at which work is completed per unit of time. Using Scrum,

Velocity is typically measured as the sum of the size estimates of the product backlog

items that are completed in a sprint (Similar Answer)

(d) i. What is meant by "*Time-boxing*" in agile software development?

(04 marks)

ANSWER IN THIS BOX

Time-boxing - The act of putting strict time boundaries around an action or
activity. It offers a fixed schedule (Similar Answer)

Cont.

(space for answer)

ii. Write down one benefit of having "*Time-boxing*" in software development.

(04 marks)

ANSWER IN THIS BOX

Establishes a WIP limit

Forces prioritization

Demonstrates progress

Avoids unnecessary perfectionism

Motivates closure

Improves predictability (Similar Answer)

(e) i. State two (02) *characteristics* and two (02) *responsibilities* of the "*Development Team*".

(08 marks)

ANSWER IN THIS BOX

Responsibilities:

    Perform Sprint Execution
    Inspect and Adapt Each Day
    Groom the Product Backlog
    Inspect and Adapt the Product and Process (Similar Answer)

Characteristics:

Self-organizing, T-shaped skills, Cross-functionally diverse and sufficient, Long-lived
High-bandwidth communications, Musketeer attitude, Right-sized, Transparent
Communication, Works at sustainable pace, Focused and committed (Similar Answer)

ii.   Briefly explain the difference between a "*Feature Team*" and a "*Component Team*".

(08 marks)

ANSWER IN THIS BOX

Focus: Feature teams focus on delivering complete features or user stories, meeting customer
needs and delivering value. Component teams focus on specific technical aspects or components
within the system.

Cross-Functionality: Feature teams are cross-functional, with members possessing different skills
necessary to deliver end-to-end features. Component teams are specialized in specific technical
areas.

Ownership: Feature teams take full ownership of delivering features from start to finish,
collaborating with stakeholders and working through all stages of the development process.
Component teams have ownership over their assigned components but may have limited
involvement in feature delivery beyond their specialized area.

Dependencies: Feature teams are designed to minimize dependencies on external teams, enabling
them to deliver complete features independently. Component teams often support multiple
feature teams by providing technical components or services, creating dependencies on their
specialized expertise. (Similar Answer)

iii.   *Scrum scales not by having increasingly larger development teams, but instead by
        having multiple right-sized Scrum Teams.*

        Briefly explain two techniques used for *multiteam coordination*, when there is more
   than one Scrum team.

(12 marks)

ANSWER IN THIS BOX

Scrum of Scrums (SoS): This technique involves representatives from each Scrum team coming
together in a dedicated meeting called the Scrum of Scrums meeting. This meeting typically
occurs at regular intervals and aims to coordinate the work and address any dependencies or
impediments between the teams. The representatives share updates on their team's progress,
discuss any cross-team issues, and collaboratively find solutions. The Scrum of Scrums meeting
enables effective communication, synchronization, and alignment among the different Scrum
teams.
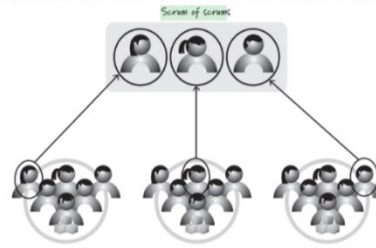
Release Train: In a Release Train, teams align their efforts and deliver value in a coordinated manner by following a predefined schedule known as the Program Increment (PI). During PI planning, teams define objectives, scope, and priorities for the upcoming PI, and then work iteratively to develop and deliver features or user stories. At the end of the PI, a System Demo is conducted to showcase the integrated work. The Release Train ensures that teams collaborate, align, and deliver value collectively in large-scale Agile initiatives.
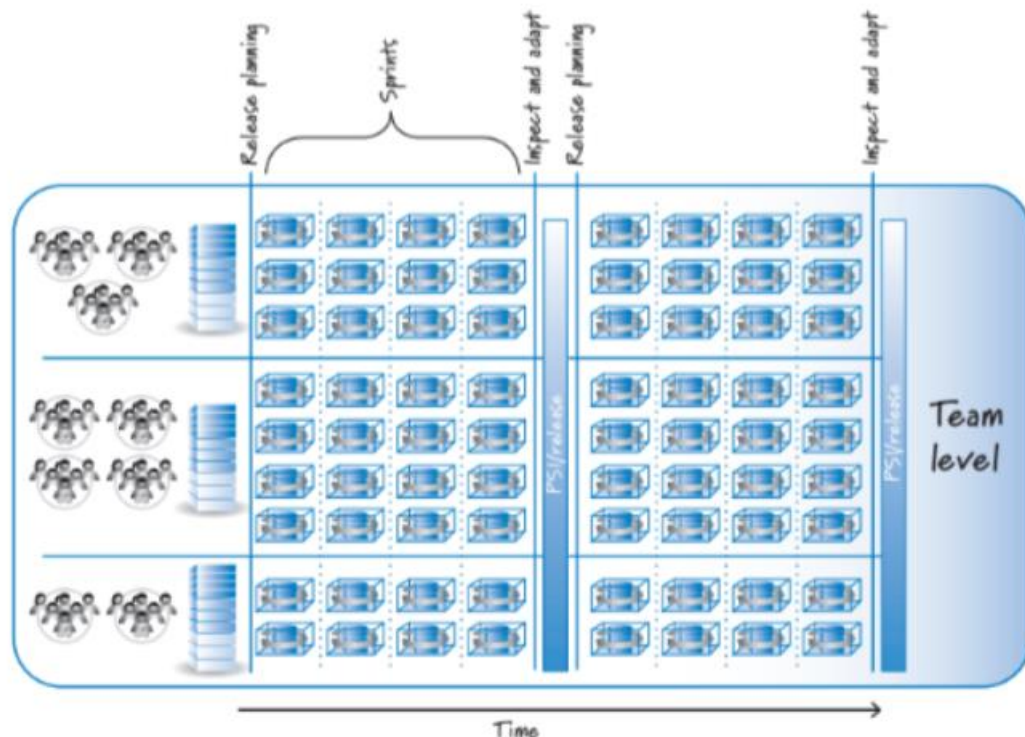
(Similar Answer)

2) (a) i. *Scrum does involve planning at multiple levels and points in time.*

Briefly describe the difference between the traditional approach to planning and the Scrum approach to planning.

(04 marks)

ANSWER IN THIS BOX

Traditional projects
Creates a detailed plan up front before development work begin.
get it right at the beginning so that rest can follow in an orderly fashion

SCRUM
Does not believe it can be done in the very beginning

| Can't produce all of the planning artifacts up front |
| Just-in-time planning (Similar Answer) |
| |

ii.   *Favour Smaller and More Frequent Releases is one of the key principles in Scrum planning*.

List two (02) reasons why Scrum favours smaller, more frequent releases.

(04 marks)

ANSWER IN THIS BOX

provide faster feedback
improves ROI (Similar Answer)

iii.   List two (02) inputs of *Release Planning*.

(04 marks)

ANSWER IN THIS BOX

the product vision

high-level product backlog

product roadmap

iv.   Briefly describe the steps for performing *Fixed-scope* release planning.

(08 marks)

ANSWER IN THIS BOX

| Groom the product backlog |
| Determine the total size of the PBI (Product Backlog Item)s |
| Estimate the team's velocity as a range |
| Divide the total size of the PBIs by the faster velocity (round up) |
| Divide the total size of the PBIs by the slower velocity (round up) |
| (Similar Answer) |
| |
| |

(b)　　i.　　*There are multiple approaches to Sprint Planning. One common approach is to separate it into two parts.*

Describe what Scrum teams do in the "How" part and the "What" part of *Two-part Sprint planning.*

(08 marks)

ANSWER IN THIS BOX

During part 1 (the "what" part) the development team determines its capacity to complete work and then forecasts the product backlog items that it believes it can deliver by the end of the sprint.

During part 2 (the "how" part) the team acquires confidence in its ability to complete the items that it forecasted in part 1 by creating a plan. Most teams create this plan by breaking the product backlog items into a set of tasks and then estimating (in hours) the effort required to complete each task. The team then compares the estimate of task hours against its capacity, in terms of hours, to see if its initial commitment was realistic.

(Similar Answer)

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ii.　　*Not doing the Sprint Retrospective or low attendance is one of the issues that Sprint Retrospective might face.*

List two (02) other *Sprint Retrospective issues* and briefly explain how to address one (01) of them.

(08 marks)

ANSWER IN THIS BOX

Not doing the retrospective or low attendance
consider changing or rotating the time so that no single location is always inconvenienced. If it is inconvenient because it is just hard to participate remotely, reconsider the current telecom infrastructure and how the exercises are being conducted to better incorporate remote participants. (Write similar explanations to solve other issues)

No follow-through

All fluff, no stuff

Ignoring the elephant in the room

Poor facilitator

Depressing and energy draining

Blame game

Complaint session
Replaces ad hoc process improvement
Too ambitious

(c) i.   *Test Expertise within the team is a critical factor for successful agile testing.*

   List two (02) other critical factors for successful agile testing.

(04 marks)

ANSWER IN THIS BOX

Test Automation

Exploratory testing

Multiple teams

   ii. *In integration testing, analyse interaction is the first step to systematically derive the required integration test cases.*

   Briefly describe what is typically done at the *equivalence partitioning* step.

(06 marks)

ANSWER IN THIS BOX

Identify the parameters or messages (inputs) that are exchanged in the interactions identified in previous step. Then, partition these parameters into sets of equal size and determine which of them cause the behaviour of the affected component.

(d)   i.   Briefly explain the responsibility of *On-site customers* during the *planning phase* of the Extreme Programming (XP) Lifecycle.

(04 marks)

ANSWER IN THIS BOX

Responsible for making business decisions.
Point the project in the right direction by clarifying the project vision, creating stories, constructing a release plan, and managing risks.

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