UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2019 – 2nd Year Examination – Semester 4

IT4305: Rapid Software Development

Part 2: Structured Question Paper

24th November 2019

(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 **3 questions** in **09 pages**.
- **Answer all questions.** The first question carries 40 marks. Second and third questions carry 30 marks each.
- **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.

Questions Answered

Indicate by a cross (×), (e.g. 1) the numbers of the questions answered.

To be completed by the candidate by marking a cross (×).	**1**	**2**	**3**	
To be completed by the examiners:				

1. The following questions are based on Agile methodology.

   a. Answer the following questions based on value delivery and cost reduction methods of the Agile methodology.

      i. *'Releasing the most valuable features first'* is one method of delivering value to the organisation. Briefly explain **two** (02) other such value delivery methods.

      (4*2=8 marks)

ANSWER IN THIS BOX
1. By setting the expectations early in the project
2. By including the business experts and by focusing development efforts on the core value
3. By changing and matching the direction of the project, based on the new information they receive/discover
4. By seeking out opportunities to improve its plans
5. By releasing new versions frequently

      ii. *'Quick and accurate communication'* is one method that agile teams use to reduce the overall cost of a project. Briefly explain **two** (02) other such cost reduction methods.

      (4*2=8 marks)

ANSWER IN THIS BOX
1. By cancelling bad projects early and replacing expensive development practices with simpler ones.
2. By making the software easier to maintain and enhance over time
3. By regularly reviewing the process and continually improving the code
4. By make progress even when key individuals are unavailable

b. *"Release Planning is one of the main responsibilities of the on-site customers".* Answer the following questions based on the responsibilities of on-site customers in Agile methodology.

i. Product Managers play the on-site customers role, when the real on-site customers are not available. List down **two** (02) other such agile team members who can play the role of on-site customers.

(2*2=4 marks)

ANSWER IN THIS BOX
Domain experts, Interaction designers, Business Analysts

ii. Briefly explain **two** (02) activities that on-site customers should perform under the *Release Planning* phase.

(4*2=8 marks)

ANSWER IN THIS BOX
1. Evangelize the project's vision
2. Identify features and stories
3. Determine how to group features into small, frequent releases
4. Manage risks
5. Create an achievable plan

c. *"Daily scrum meetings are similar to the traditional status update meetings.*

i. Do you agree with the above statement? Justify your answer.

(2+4=6 marks)

ANSWER IN THIS BOX
Agree/Disagree: No
Justification:
The daily scrum is an **inspection**, **synchronization**, and **adaptive** daily
planning activity that helps a self-organizing team do its job better.

ii. What are the **three** (03) questions that each member should answer in a daily scrum meeting (daily stand-up meeting)?

(3*2=6 marks)

ANSWER IN THIS BOX
1. What did I accomplish since the last daily scrum?
2. What do I plan to work on by the next daily scrum?
3. What are the obstacles or impediments that are preventing me from making progress?

2. The following questions are related to the Scrum framework.

a. i) Explain what is meant by a *Feature Team* and a *Component Team* in Scrum.

(2*2= 4 marks)

ANSWER IN THIS BOX
Feature team: is a cross-functional and cross-component team that can pull end
customer features from the product backlog and complete them.
Component team: focuses on the development of a component that can be used to
create only part of an end-customer feature.

ii) *"Scrum methodology prefers Feature Teams. However, many organizations prefer Component Teams".* Briefly explain why organizations prefer component teams?

(3 marks)

ANSWER IN THIS BOX
Organizations prefer component teams because, they believe that a team of experts
who are trusted to make safe and effective changes to a particular area of code
should own that area of the code. They prefer having a component team
responsible for developing that code and making changes on behalf of others.

b. A Scrum Master acts as an agile coach for the Scrum team. Circle True or False against each statement regarding how the Scrum Master coaches the *Product Owner* and the *Development Team* for the success of a project.

(4 Marks)

Scrum Role	Statement	True / False
Product Owner	Helps the Product Owner maximize business outcome.	**True** / False
	Listens to the complaints of the Product Owner	**True** / False
Development Team	Solves problems that the team could solve by themselves.	True / **False**
	Solves problems that the team can't resolve.	**True** / False

c. *"The inputs to release planning include outputs from Product Planning."*

i) State **three** (03) inputs to *release planning*.

(1*3 =3 marks)

ANSWER IN THIS BOX

Product Vision

High-Level Product Backlog

Product roadmap

ii) Briefly explain **one** of the three inputs explained above.

(1*3 =3 marks)

ANSWER IN THIS BOX

Product vision: The product vision provides a clear description of the areas in which stakeholders, such as users and customers, get value.

High-Level Product Backlog: Once a product vision has been established, the next step is to generate an initial high-level version of the product backlog.

If the product is completely new, it is required to do at least some minimal up-front requirements generation to populate the product backlog and estimate at least the highest-priority items.

Product roadmap:Once a product vision and high-level product backlog have
been established, it is helpful to build a product roadmap (sometimes referred
to as a release roadmap). A product roadmap communicates the incremental
nature of how the product will be built and delivered over time, along with the
important factors that drive each individual release.

d. *"Team members with T-shaped skills are very important for a Scrum team".*

i. Samantha is a highly experienced User-Experience (UX) Designer. She is **not** highly skilled in Quality Assurance (QA) or technical documentation, but helps her team with Quality Assurance and technical documentation. Explain what is meant by T-shaped skills with respect to Samantha's scenario.

(3 Marks)

ANSWER IN THIS BOX
T-shaped skills mean that a team member (say, Samantha) has deep skills in her
preferred functional area, discipline, or specialty (which is UX designing). In
This respect Samantha has broad skills (testing, documentation) that allows
her to work outside her core area.

ii. Consider a Scrum team working on video game development. It could have an artist, an animator, an audio-engineer, an Artificial Intelligence programmer and a Quality Assurance Engineer. Should every team member have T-shaped skills in this scenario? Justify your answer.

(4 Marks)

ANSWER IN THIS BOX
Yes/No: No
Justification: in domains with intense specialization, like video game
development, it's unreasonable to assume that everyone can do every job. For
example, the artist's job could not be done by anyone without the skill. However,
any team member could help the artists with non-artistic design work.

e. Following is an incomplete diagram which shows different levels in Scrum multilevel planning.

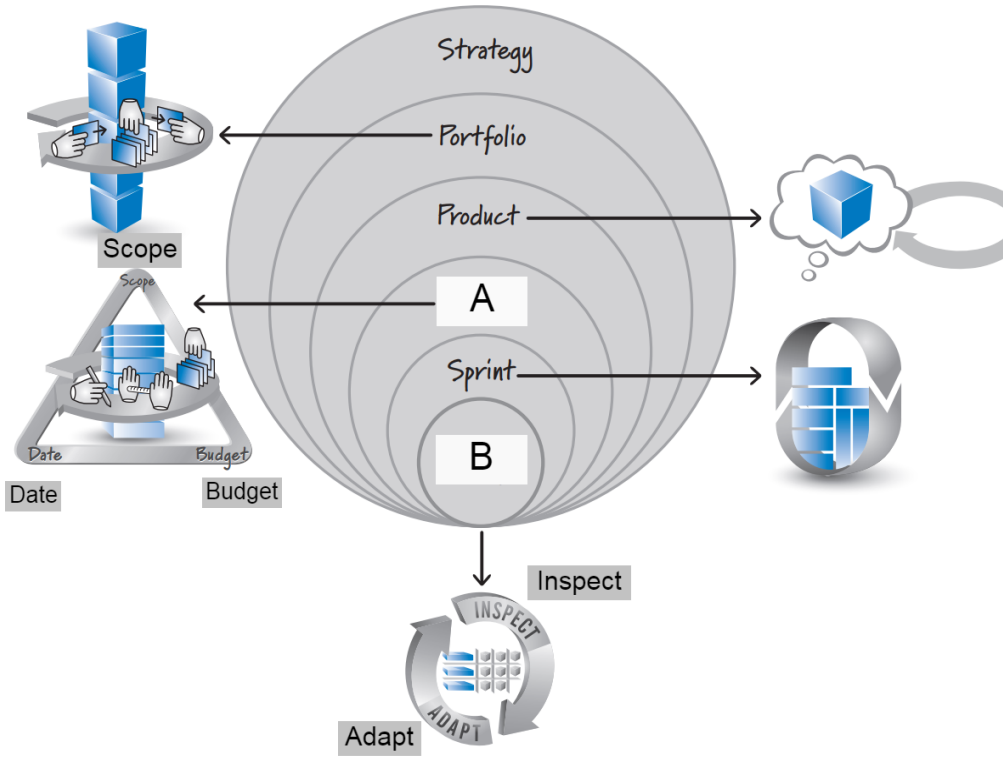

Figure 1 Different Levels of Planning

Source: Essential Scrum, A Practical Guide to the Most Popular Agile Process by Kenneth S. Rubin

i) Write down suitable terms for the labels Ⓐ and Ⓑ in Figure-1.

(1*2= 2 marks)

ANSWER IN THIS BOX
A: Release Planning
B: Daily Planning

ii) Fill the table given below with the Scrum roles and deliverables corresponding to each level of planning identified by the labels Ⓐ and Ⓑ in Figure 1.

(2*2= 4 marks)

Label	**Scrum Roles Involved in Planning**	**Deliverables**
Ⓐ	Entire Scrum team,stakeholders	Release Plan
Ⓑ	Scrum Master, development team	Inspection of current progress and adaptation of how best to organize the upcoming day's work

3. a. List **two** (02) tools that can be used to communicate Sprint Progress.

(2*2=4 Marks)

ANSWER IN THIS BOX
Task boards
Burn down charts
burn up charts

b. State the **two** (02) outputs of the Sprint Review.

(2*2=4 Marks)

ANSWER IN THIS BOX
Output 01: Groomed product backlog
Output 02: Updated release plan

c. One of the common issues faced by organizations when conducting a Sprint Retrospective is the *low attendance*. List another **three** (03) such issues.

(2*3 = 6 Marks)

ANSWER IN THIS BOX
Poor facilitator
Ignoring the elephant in the room – **ignoring an obvious, critical issue**
All fluff and no stuff – **don't achieve anything actionable.**
Depressing and **energy draining**.
Blame game and finger pointing.
Meeting becoming a **complaint session**.
Being **too ambitious.**
No follow through for actions identified in the retrospective.
Replaces ad-hoc process improvement

*d. "Technical Debt in a project is the total amount of **less than perfect** design and implementation decisions."*

Briefly describe how *Technical Debt* may have bad effects on Software Maintenance.

(4 Marks)

ANSWER IN THIS BOX
when developers go for the **quick and dirty solution** rather than
conforming to a better, standard approach, which is probably the right way,
it will inevitably accrue a technical debt over time. But later in the
maintenance phase, even the smallest task may take a **lot of effort**
escalating the maintenance costs.

e. "In Extreme Programming (XP), everyone is expected to fix bugs in the code. It does not matter who wrote the code."

i. Do you agree with the above statement? Justify your answer.

(2+4 = 6 marks)

ANSWER IN THIS BOX
Yes/No: Yes
Justification: there's a risk when the **critical knowledge** about the code is
Concentrated **In few individuals**. In case of one programmer being
unavailable, there will be a **bottleneck**. Therefore, XP encourages **collective**
code ownership where everybody's responsible for the code and the team
roles are interchangeable.

f. The software industry uses many Pair Programming best practices. Having the *programming pair sit comfortably, side by side* is one of them. State **three** (03) other similar practices used in Pair Programming.

(2*3 = 6 marks)

ANSWER IN THIS BOX
Pair on everything you need to maintain.
Allow pairs to form fluidly rather than assigning partners. (**Not assigning**
Partners)
Switch partners when you need a fresh perspective.

Avoid paring with the same person for more than a day at a time**.**
Produce **code through conversation**. **Collaborate**, don't critique.
Switch driver and navigator **roles** frequently**.**

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