



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2017 – 2nd Year Examination – Semester 4

IT4305: Rapid Software Development
Part 2: Structured Question Paper

19th November 2017
(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 **10 pages**.
- **Answer all questions.** First and second question carry 30 marks each and the third question carries 40 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.

Questions Answered

Indicate by a cross (×), (e.g. ☐) 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:				

All right reserved.

1. a. “Individuals and interactions over processes and tools” is one of the four guiding values of the Agile Manifesto. List down **three** other values of the Agile Manifesto.

(3 Marks)

ANSWER IN THIS BOX

1. Responding to change over following a plan

2. Customer collaboration over contract negotiation

3. Working software over comprehensive documentation

- b. What is meant by ‘time boxing’ in agile software development? Write down one benefit of having time-boxing in software development.

(4 Marks)

ANSWER IN THIS BOX**Time boxing**

The act of putting strict time boundaries around an action or activity. it offers a fixed schedule

Benefit

ensures the team is building and delivering the most valuable work as soon as possible

OR

prevent a common problem in software development called “feature creep,” where teams incrementally add features to software without scrutinizing relevance or need

- c. “Eliminate waste” is one of the seven (07) principles in Lean Software Development (LSD). List down **three** (03) other principles in LSD.

(3 Marks)

ANSWER IN THIS BOX

1. Amplify Learning

2. Decide as Late as Possible

3. Deliver as Fast as Possible

4. Empower the Team

5. Build Integrity In

Any 3 of the above

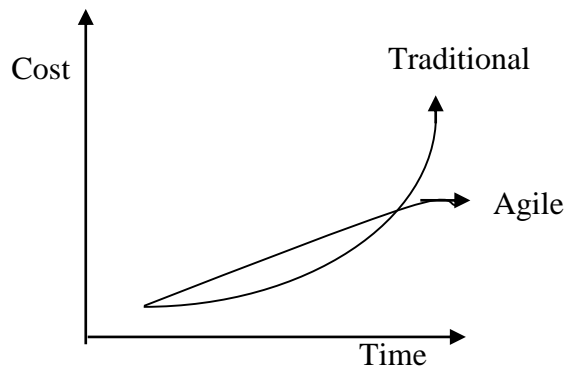
- d. Agile development focuses on achieving three (03) types of successes. Name them and briefly explain the importance of achieving them in one sentence each.

(9 Marks)

ANSWER IN THIS BOX

Type of the success	Importance
Personal successes	<ul style="list-style-type: none"> Without personal success <ul style="list-style-type: none"> – troubles motivating yourself and employees.
Technical successes	<ul style="list-style-type: none"> Without technical success <ul style="list-style-type: none"> source code will eventually collapse under its own weight.
organizational successes	<ul style="list-style-type: none"> Without organizational success <ul style="list-style-type: none"> – team may find that they’re no longer wanted in the company.

- e. The following graph shows the cost of change curve (cost vs. time) for both traditional and agile software development. Briefly explain possible reason for the two curves (Traditional and Agile) to be different.



(5 Marks)

ANSWER IN THIS BOX

A well-designed agile process may “flatten” the cost of change curve by coupling incremental delivery with agile practices such as continuous unit testing and pair programming.

Thus team can accommodate changes late in the software project without dramatic cost and time impact.

Traditional : Testing is done during the testing phase.

the longer a defect is left unaddressed, the more expensive it will be to fix.

Fixing an error when it is just a specification might just take a minute; when it has been coded, tested and rolled out to thousands of users, the cost of a fix and redeployment can be very expensive.

- f. Briefly explain the main difference in the testing approach used in agile software methodology compared to traditional software development.

(3*2=6 Marks)

ANSWER IN THIS BOX

In Agile environment, testing is not a phase. It is an activity parallel to

development because in agile environment, small features of software are

delivered frequently after testing. So the testing time is short as we are only

testing small features.

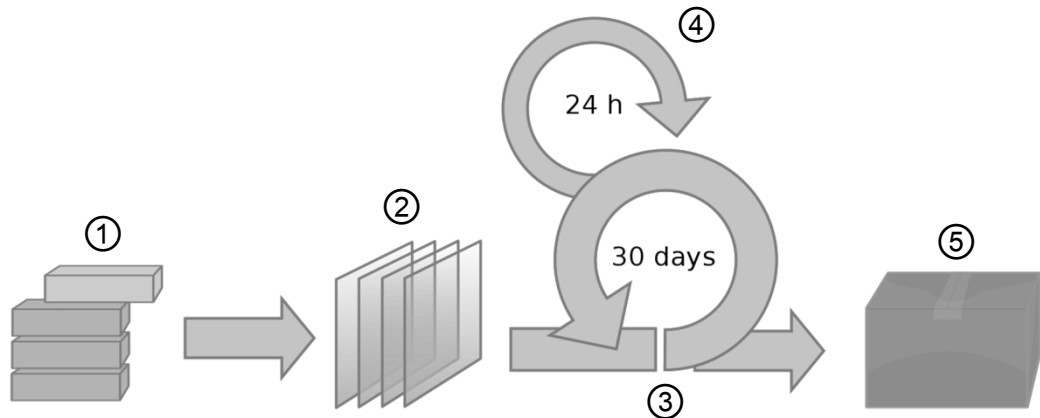
In the Traditional testing, there is a testing phase at the end of the development.

Therefore, testing is a big effort made after the whole application is developed.

Testing time is long as we have to test the whole application.

2. a. Following is a diagram which shows the basic steps of a Scrum.

(5 Marks)



Identify what are the most suitable terms to replace the labels from ① to ⑤.

ANSWER IN THIS BOX

①	Product Backlog
②	Sprint Backlog
③	Sprint
④	Daily Scrum Meeting
⑤	Working Software(Shippable Product)

- b. List down **three** main responsibilities of a Product owner, a Scrum Master and the Development team. Your answer should include three responsibilities each of these Scrum roles.

(9 Marks)

ANSWER IN THIS BOX

Product Owner

(i) Groom the product backlog

(ii) Define acceptance criteria and verify that they are met

(iii) Share the product vision/goals with the team

Any other relevant

Scrum Master**(i) Remove obstacles faced by the team****(ii) Assist the team in achieving the iteration goals****(iii) Acts as a coach to both the development team and the product owner****Any other relevant****Development Team****(i) Perform Sprint Execution****(ii) Inspect and Adapt Each Day****(iii) Groom the Product Backlog****Any other relevant**

c. Consider the following statement.

*“To make Scrum a success, it requires a cross functionally diverse and capable team.”*Briefly explain why Scrum requires a cross functional team while explaining what a *cross functional team* is?**(6 Marks)****ANSWER IN THIS BOX****Define Cross Functional Team:**

In Scrum, cross functional team refers to a team of experts who are responsible to deliver potentially shippable software. It requires developers (in scrum team all are developers) who have some deep knowledge in one area (Coding, Designing, Testing etc.) with broad knowledge in other development activities as well.

Need for Cross Functional Team:

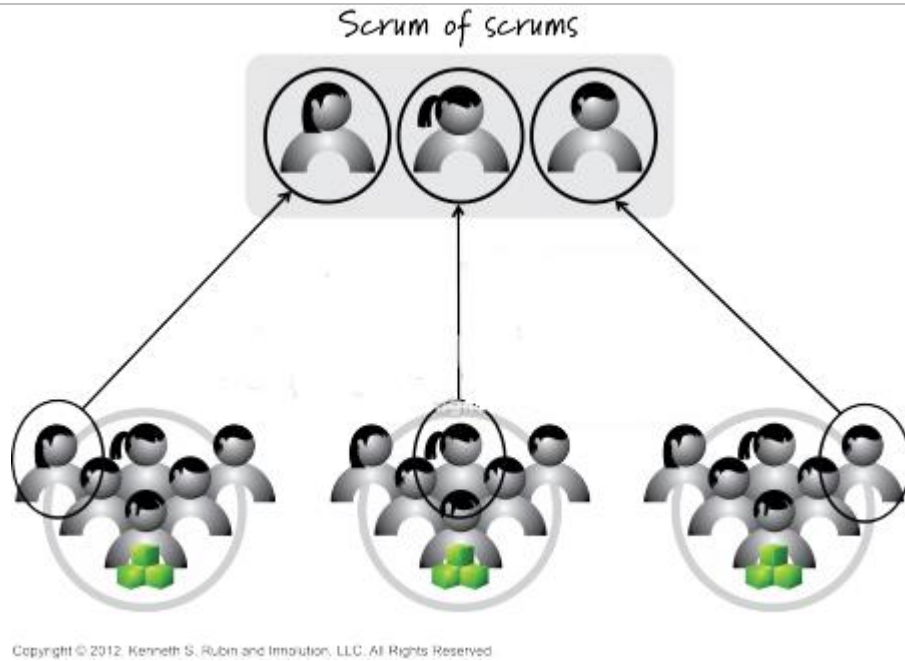
Since the group is smaller and time is boxed they should deliver the product on time while helping each other. Certain amount of experience and broad knowledge in several development functions is essential for a Scrum team member.

- d. One of the concepts used in Scrum is the “*Scrum of Scrums*” in order to solve the problem of scalability. Briefly explain what the Scrum of Scrum is and its use. Use an appropriate illustration in your answer.

(6 Marks)

ANSWER IN THIS BOX

Explanation (3 Marks) with an illustration (3 Marks)



- e. Following is a diagram which shows a sample task board of a daily scrum meeting.

(4 Marks)

Lable P	Lable Q	Lable R	Lable S
Story A		Task	Task
Story B	Task	Task	Task
Story C		Task	Task

Identify what are the most suitable terms to replace labels from Ⓐ to Ⓔ.

Lable P	Story
Lable Q	TO DO
Lable R	
Lable S	

	In Progress
	Done

3. a. Conducting of a retrospective in each iteration of an agile project starts with a brief planning session and ends with a product demonstration and retrospective. Write down the other four (04) tasks that should be conducted during a retrospective.
(2 * 4=8 Marks)

ANSWER IN THIS BOX	
Prime Directive	
Brainstorming	
Mute Mapping	
Retrospective Objective	

- b. What is the main difference and the similarity between Scrum and Extreme Programming?

(5 Marks)

ANSWER IN THIS BOX	
Difference:	Scrum is a software development methodology, XP is a programming practice
Similarity:	Both are agile techniques

- c. Briefly explain each of the following terms related to Extreme Programming.

(3 * 5=15 Marks)

ANSWER IN THIS BOX	
	Description
	a useful tool for identifying the underlying causes of your problems

Root Cause Analysis	prevent mistakes by fixing our process
Retrospective	coming up with a specific solution gives the team a chance to
	continually improve our work habits
Usage of Ubiquitous Language	Try describing the business logic in your current system to a nonprogrammer domain expert
Spike solutions	<ul style="list-style-type: none"> • a technical investigation • It's a small experiment to research the answer to a problem. • usually to create a small program or test that demonstrates the feature in question.
Filling Roles	<ul style="list-style-type: none"> • No need to have one person for each role—some people can fill multiple roles.

d. Consider the following paragraph regarding an agile project planning meeting.

“During an iteration planning meeting, the team is sharing their thoughts about a user story. The product owner advises that the customer should have one screen to enter information. The developer explains that there are technical limitations for the feature, due to the amount of information needed to be captured on the screen. Another developer says that there are risks about performance as the information will be stored in an external offsite database.”

The following are three (Ⓐ- Ⓒ) opinions that the tester can share during the conversation.

Ⓐ The tester advises that usability is more important than performance.

Ⓑ The tester advises that performance acceptance criteria should standard maximum of 1 second for data storage.

© The tester advises that the user story needs acceptance criteria to be testable.

What is the best opinion that the tester can share with the team?

Justify the reason for your choice and for rejecting the other two options.

(12 Marks)

ANSWER IN THIS BOX

A is incorrect

The product owner prioritizes the various quality characteristics

B is Incorrect

The performance acceptance criteria would normally be determined by the product owner.

C is correct

The tester contributes by ensuring that the team creates acceptance criteria for the user story.

Index No
