UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2014/2015 – 2ⁿᵈ Year Examination – Semester 4

IT4305: Rapid Software Development
Part 2: Structured Question Paper

2ⁿᵈ of August, 2015
(ONE HOUR)

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **3 questions** and **9 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:				

(1) (a) What is the main difference between Agile Testing and Traditional testing? **(6 Marks)**

> **ANSWER IN THIS BOX**
>
> In Agile environment, <u>testing is not a phase.</u> 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 <u>testing phase</u> 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.

(b) List down four (04) guiding values of Agile Manifesto. **(8 Marks)**

> **ANSWER IN THIS BOX**
>
> Individuals and interactions over processes and tools
>
> Responding to change over following a plan
>
> Customer collaboration over contract negotiation
>
> Working software over comprehensive documentation
>
> (2*4 Marks)

(c) What is the primary purpose of 'value stream mapping' as used in Lean Software development? **(2 Marks)**

> **ANSWER IN THIS BOX**
>
> To identify and eliminate waste.

(d) At the beginning of the 5th iteration of a project, a new requirement was introduced to support a new type of browser. The tester realizes that the existing test automation framework and scripts will not support the new type of browser. **(14 Marks)**

Here are three procedures that the tester can follow.

I. The tester will notify the team of the issue. A risk analysis is done and the team decides that regression testing must be performed on the new type of browser in addition to the other supported browsers. The tester will update the sprint plan by adding tasks to modify the framework and scripts to support the new type of browser.

II. The tester does some research and concludes that the risk that any new defects would be introduced in the new type of browser that have not already been found in other supported browser is very low. The tester continues with the existing sprint plan and makes no changes to test automation framework or scripts.

III. The tester will stop what he is doing, design specific tests for compatibility testing of the new type of browser and communicate with the team that any other testing work for the sprint will have to be pushed to the next iteration.

What is the best course of action for the tester on this team to take?
Justify the reason for you to select that option and to reject the other two options.

ANSWER IN THIS BOX

I is correct.   (2 Marks)

The decision to modify the test automation framework and scripts should be done collaboratively with the whole team. The tester is then responsible to make changes to the iteration plan as required.   (4 Marks)

II is incorrect:– The tester must notify the team and will then together decide what to do with the issue.   (4 Marks)

III is incorrect: – It is not up to the tester alone to determine scope of work. This issue will be addressed by creating a new user story or modifying an existing user story, and will be addressed by the entire team during sprint planning.

(4 Marks)

(2) Code360 is an ICT solutions provider, catering to clients all over the world. Until recently, they were following the waterfall method when implementing their products. Currently the company is going through a major revision in their development process and the management is asking you to look in to SCRUM as the software engineering methodology for their products.

(a) List any five (05) reasons, why code360 should use SCRUM as the software development methodology over their current practice **(5 Marks)**

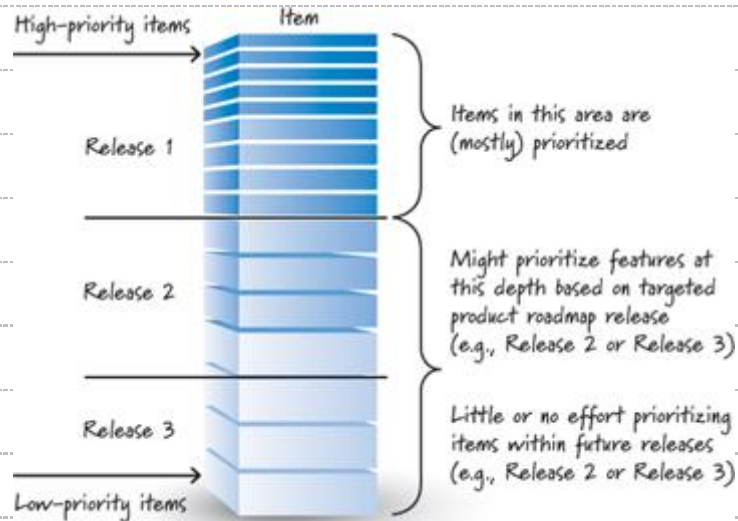| ANSWER IN THIS BOX |
| --- |
| Scrum uses adaptive planning. WF tries to keep to the initial plan. |
| Scrum gets feedback from working software early and often. WF does not have working software until very late in the cycle. |
| WF assumes we know 'everything' upfront. Scrum assumes there are lots we do not know (yet) and focuses on maximizing learning throughout the project. |
| WF tries to minimize change. Scrum tries to maximize the benefits of good change (eg, learning) and minimize the negative impact of bad change. |
| WF puts most responsibility on the Project Manager. Scrum puts most responsibility on the small dedicated Team. |
| |
| WF assumes that PM should plan the work. Scrum assumes that it is best if the Team plans its own work and re-plans. |
| WF has weak controls, Scrum has strong and frequent controls (e.g., did you all get all those features done this past 2 weeks?)…which enables faster improvement. |
| |

(b) One important artefact of SCRUM is the product backlog. Explain what the product backlog is with the help of a diagram **(7 Marks)**

ANSWER IN THIS BOX
Using Scrum, we always do the most valuable work first. The product owner, with
input from the rest of the Scrum team and stakeholders is ultimately responsible for
determining and managing the sequence of this work and communicating it in the form
of a prioritized (or ordered) list known as the product backlog. On new-product
development, the product backlog items initially are features required to meet the
product owner's vision. For ongoing product development, the product backlog might

also contain new features, changes to existing features, defects needing repair,

technical improvements, and so on.

(c) i. List any three (3) other artefacts of scrum in addition to the product backlog. **(3 Marks)**

ANSWER IN THIS BOX

Sprint backlog

Burnup chart

Burndown chart

Release /Product increment

Velocity chart

(03 of the above)

(d) Product owner is an important member of any SCRUM team. However, it is known that there are some projects that have a team of the product owner. Explain why a product needs a product owner team. **(5 Marks)**

ANSWER IN THIS BOX

The workload of being a product owner might be greater than what any one full-time

person can reasonably perform. If so , the product owner can delegate some product

owner responsibilities to other people as long as there is one person on the team

who is the decision maker.

(e) i. Scrum involves multiple levels of planning. Briefly describe what multilevel planning is and list the five (5) levels of planning**. (7 Marks)**

ANSWER IN THIS BOX

Plan at multiple levels of detail and at multiple times throughout development.

Portfolio

Product

Release

Sprint

Daily

ii. Briefly explain the two (2) planning levels formally defined in SCRUM. **(3 Marks)**

ANSWER IN THIS BOX

Release

A very high-level plan for multiple Sprints (e.g. three to twelve iterations) is created during

Release planning. It is a guideline that reflects expectations about which features will

be implemented and when they are completed. It also serves as a base to monitor progress

within the project. Releases can be intermediate deliveries done during the project

or the final delivery at the end.

Sprint

Product backlog represents weeks/months of work .Sprint planning is used to

determine the most important subset of product backlog items

to build in the next sprint.

(3) (a) Write down five (05) practices of Extreme Programming (XP) and describe each by a single sentence. **(1 *5 + 2 * 5=15 Marks)**

ANSWER IN THIS BOX

Practice	Description
Pair programming	It doubles the brainpower available during coding and gives one person in each pair the opportunity to think about strategic, long-term issues.
Energized work	It acknowledges that developers do their best and most productive work when they are energized and motivated.
An informative workspace	It gives the whole team more opportunities to notice what is working well and what is not.
Root-cause analysis	It is a useful tool for identifying the underlying causes of your problems.
Retrospectives	They provide a way to analyse and improve the entire development process.

(b) When it comes to Product Releasing in Extreme Programming, it attempts to prevent bugs rather than fixing bugs. Explain briefly how this is achieved by using 2 practices in XP.

(6 Marks)

ANSWER IN THIS BOX
Pair programming provides instant peer review, enhances brainpower and maintains self-discipline.
Energized work reduces small mistakes. Coding standards and a "done done" checklist catch common errors.
(3*2 Marks)

(c) Compare and Contrast Scrum and Extreme Programming with respect to the given criteria.

(12 Marks)

ANSWER IN THIS BOX

	Scrum	XP	
Time Span of the iteration	lasts two weeks to one month	a much shorter period of one to two weeks long	
Changes during iterations	does not allow changes to sprints (Once a decision has been made to deliver a sprint backlog item, the set has to remain unchanged till the end of the sprints completion.)	are more open to change within iterations	
Prioritization of the work	The product owner has the job of choosing the product backlog but the team has the job of determining the way in which they will break down the backlog items into tasks.	The priorities are developed by the customer and the team is required to follow the order created	
Team Size	**Team Size**	allows the possibly to extend into larger teams	

(d) One of the practices of Extreme Programming is "Sit-together". List down three (03) benefits of this practice. **(7 Marks)**

ANSWER IN THIS BOX

1. Overhear other people's conversations and contribute answers they may not expect.

2. People to be physically present to answer questions. (you need only turn your head and ask. You get an instant response.)

3. It eliminates waste caused by waiting for an answer.

4. It helps the groups to interact socially and gain respect for each other professionally.

   (3 of the above)

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