UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2015/2016 – 2nd Year Examination – Semester 4

IT4305: Rapid Software Development

Part 2: Structured Question Paper

1st October, 2016

(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** 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. [X]) 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:				

Index No …….

1. a. List **one** of the main differences between Agile Project Planning and Traditional Project Planning?

(6 Marks)

ANSWER IN THIS BOX
Traditional Project planning activity is a heavy, upfront process at the beginning of a project.
Agile planning is an evolutionary process, and the plan evolves and becomes more detailed as it goes along

b. There are twelve (12) principles behind the Agile Manifesto and one of them is "Customer satisfaction by early and continuous delivery of valuable software". List down other three (03) Agile Principles.

(6 Marks)

ANSWER IN THIS BOX
1. Welcome changing requirements, even in late development
2. Working software is delivered frequently (weeks rather than months)
3. Close, daily cooperation between business people and developers
4. Projects are built around motivated individuals, who should be trusted
5. Face-to-face conversation is the best form of communication (co-location)
6. Working software is the principal measure of progress
7. Sustainable development, able to maintain a constant pace
8. Continuous attention to technical excellence and good design
9. Simplicity—the art of maximizing the amount of work not done—is essential
10. Best architectures, requirements, and designs emerge from self-organizing teams
11. Regularly, the team reflects on how to become more effective, and adjusts accordingly
(2*3 Marks)
Any 3 of the above

c. What is the purpose of having Kanban boards in Kanban Software development?

(2 Marks)

ANSWER IN THIS BOX

To visualize the workflow.

(simplest kanban board consists of three columns: "to-do", "in progress" and "done")

d. "Mapping Value Stream" is one of the five principles in Lean Software Development. Write down another two principles.

(4 Marks)

ANSWER IN THIS BOX

Identify Values, Create Flow, Establish Pull, Seek Perfection

(Any 2 of the above)

e. Stand-Up meetings are a popular way to start the day in agile software development. During these meetings, three types of questions are used and one of them is "What are the tasks completed yesterday?" Write the other two main topics that will be discussed during a meeting.

(3*2=6 Marks)

ANSWER IN THIS BOX

- What will I do today?
- What obstacles are impeding my progress?

f. Compare and contrast the method of accepting changes in requirements during the development process in Traditional development, Scrum and Extreme Programming.

(3*2=6 Marks)

ANSWER IN THIS BOX

Traditional Software Development: No changes will be accepted.

Scrum : 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.)

Extreme Programming : are more open to change within iterations

2. a. In Scrum, Sprint planning process has several inputs and outputs. Write down two inputs and two outputs of Sprint planning process.

(4 Marks)

ANSWER IN THIS BOX

Inputs	Outputs
❖ Product backlog ❖ Constraints ❖ Team capabilities ❖ Initial sprint goal	❖ Sprint Goal ❖ Sprint Backlog
Any 2 of the above	

b. Scrum involves multiple levels of planning. Following levels are three of them.

(6 Marks)

i. Portfolio Planning

ii. Product Planning/Envisioning

iii. Release Planning

Briefly explain each of them

ANSWER IN THIS BOX

'Portfolio Planning'

Determine which products to work on, in what order, and for how long.

Product Planning/Envisioning'

- Used to create the initial product backlog
- The goal is to work upon an idea, describing the essence of the potential product and creating a rough plan for how to approach its creation.
- Can decide whether to fund the next level of more detailed development
- The goal is to work upon an idea, describing the essence of the potential product and and creating a rough plan for how to approach its creation.
- Can decide whether to fund the next level of more detailed development

Release Planning'

- Helps answer to following questions
  - When will we be done?
  - Which features can I get by the end of the year?
  - How much will this cost?
- Longer term planning
- Every organization must identify the proper sequence for releasing features

c. "Clever Computing" is an IT solution provider and "WelBeing - health information system" is the new project that Clever Computing is going to develop. After evaluating characteristics of the project and capabilities of the company, management has decided to develop this project using Scrum.

Four characteristics or capabilities are given below. **(10 Marks)**

i. Clever Computing have 10 – 12 well experienced and multi-skilled employers. Does this capability supports Scrum approach? Justify your answer.

ANSWER IN THIS BOX

YES

Clever Computing has well experienced and multi-skilled persons which can be utilized to create Cross-Functional, self-organized team.

ii. WelBeing, the health information system will have several requirement changes during the development life cycle. Does this characteristic support Scrum approach? Justify your answer.

ANSWER IN THIS BOX

YES

Scrum has many formal meetings and events to inspect and adopt. Scrum welcome requirement changes during the development life cycle.

iii. WelBeing, the health information system has 10 different independent functions and three (3) of them are marked as urgent requirements. Does this characteristic supports Scrum approach? Justify your answer.

ANSWER IN THIS BOX

YES

Those requirement can be placed at the top of the product backlog and deliver in early sprints

iv. Client of the WelBeing project needs to use software with urgent functionalities first while other functions can be added later. Does this need align with Scrum approach? Justify your answer.

ANSWER IN THIS BOX

YES

Scrum always outputs a workable software in each sprint. Therefore, Client may have a workable software with urgent functionalities after early sprints

d. 'Scrum encourages more frequent and smaller releases'. Do you agree with this statement? Justify your answer.

(5 Marks)

ANSWER IN THIS BOX

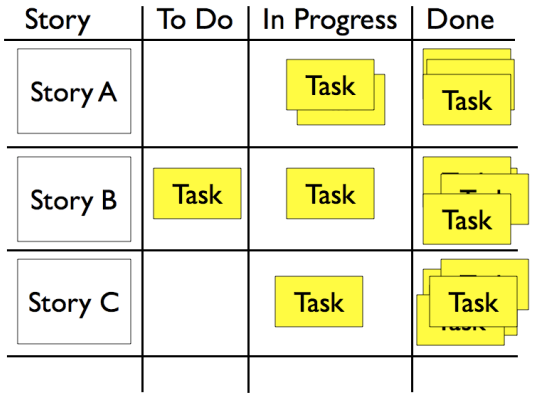
- YES.

Scrum is an agile approach where schedule and cost is fixed while scope is managed according to that. Usually Sprint life cycle is 2- 4 weeks. Scrum outputs a workable software after each sprint with prioritized functionalities. Therefore Scrum encourages more frequent and smaller releases'

e. At daily scrum meeting development team update the Task Board which is a way of track the progress of the team. Briefly explain the 'Task Board'. Use an illustration in your answer.

(5 Marks)

ANSWER IN THIS BOX



Simple explanation of the illustration OR Full marks for the illustration

3. a. Describe each of the following terms related to Extreme Programming by a single sentence.

(3 * 5=15 Marks)

ANSWER IN THIS BOX

	Description
Test Driven Development (TDD)	*produce well-designed, well-tested, and well-factored code in small, verifiable steps*
Code Refactoring	the process of changing the design of your code without changing its behavior
Root-cause Analysis	It is a useful tool for identifying the underlying causes of your problems.
Sit-together	brings together customers and programmers so that they may maximize value while minimizing costs./ combines the expertise of the whole team to create achievable plans.
Planning Game	locating the whole team in a single room so that it can stimulate the information exchange by making it simple to just turn to the colleague and ask.

b. What is meant by the two Extreme Programming practices called "Informative Workspace" and "Energized work"?

(5 Marks)

ANSWER IN THIS BOX
Informative Workspace:
Create big charts and plans that graphically show your progress. Usage of hand-drawn charts, posted prominently, to ensure that information is constantly visible and easily modified.
Energized work:
Professionals do their best, most productive work when they're energized and motivated. To achieve this, combine quality time away with focused attention while at work. Support energized work by providing a compelling vision and creating achievable plans. Shield team members from destructive organizational politics and useless meetings.

c. Each iteration of an agile project ends with a product demonstration and retrospective. The most common type of retrospective is called iteration retrospective and sometimes in important milestones, another three types of intensive retrospectives will be held. "Surprise retrospectives" is one of them and write the other two types.

(4 Marks)

ANSWER IN THIS BOX
1. release retrospectives 2. project retrospectives

d. Compare and Contrast Traditional Software Development Methodologies and Extreme Programming with respect to the given criteria.

(2*8=16 Marks)

ANSWER IN THIS BOX

	Traditional Software Development Methodology	**Extreme Programming**
Scope (Requirements)	Well known and will not be changed.	Uncertain and subject to change.
	Traditional Software Development Methodology	**Extreme Programming**
Ownership (Responsibility of the delivery)	Ownership belongs to the Project Manager	Shared ownership.
Time Scheduling	Clearly defined schedules for each phase.	Time-boxed in short cycles.
Risk Identification	At the end of the testing phase.	Early identification during each sprint.
Task Assignment (Responsibility)	Project Manager assigns the tasks.	Team members are empowered to own the features.

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