Bachelor of Information Technology (BIT) Programme
End Semester Examination (Semester 04)

Module Name	**: Agile System Developments**
Module Code	**: BIT 2202**
Assessor	**: Professor S. Vasanthapriyan**
Batch	**: BIT 001**
Date	**: 14/10/2021**
Time	**: 8.00 AM to 1.00 PM – an Alternative Online Assessment**

Special Instructions to the candidates:
1. The Assessment is conducted online as Alternative Assessment according to Non-State Higher Education guidelines.
2. Answer FIVE (5) Questions Only out of SIX (6) questions.
3. Illustrate your answers with clear diagrams wherever applied.
4. The paper is marked out of 100 Marks.
5. Must be submitted on or before the deadline stated.
6. Follow the General Guidelines given by the Department of Examination for exam Start time and closing time

Question 1

a) Discuss ANY THREE views that Agile methods are far more able to deliver high customer and worker satisfaction than their traditional counterparts. [20 marks]

b) A software specification contains 4 requirements (R1, R2, R3 and R4), and the creation of 4 components (C1, C2, C3 and C4). The requirements and components are linked as follows: [15 marks]
   - R1 requires C1, C2
   - R2 requires C1, C3
   - R3 requires C2, C3
   - R4 requires C3, C4

   Using an incremental approach, and THREE or more iterations, describe how the components will be built, integrated and released in a product for each iteration.

c) Scrum Agile Development is a process that values responding to change over following a plan". [20 marks]

   i. Discuss THREE issues a SCRUM MASTER should be mindful of when adopting this approach during software development.

   ii. Provide a detailed diagram of a 4 weeks Sprint in a Scrum framework.

d) Discuss the view that Agile methodologies can adequately address many Level 2 and 3 practices of software process improvement (SPI). [15 marks]

e) Give a brief overview for Burn Down charts and Burn Up charts in Agile Development Environments? [20 marks]

f) Briefly explain how "Change Management" is achieved in Agile Development approaches? [10 marks]

Question 2

a) Discuss THREE aspects of the requirements engineering (RE) process and assess their usefulness in capturing, specifying, and communicating requirements throughout the software lifecycle in Agile environments. [24 marks]

b) The Business Analyst has TWO major responsibilities. Explain them in detail. [20 marks]

c) In considering product maintainability, one option is to 'deliver first, re-engineer later'. Explain this scenario with an example. [15 marks]

d)	Defines correctly "non-functional requirements" with a suitable example?	[15 marks]
e)	A small specialist language training company would like to improve the services offered to existing clients and increase its client base by replacing existing call centre and paper-based mailshots, with online web technology deployment. As a consultant requirement engineer, discuss the tools and techniques that you would deploy to elicit, analyze, document, and check services requested by the company and any actual or implied constraints.	[26 marks]

Question 3

a)	In Agile Project Management, how many levels of decision making are normally present in projects? Discuss them in detail.	[15 marks]
b)	"There is a perception that risk management is a Project Manager responsibility". Justify this statement.	[15 marks]
c)	Agile project management and product development use several different types of documents at each iteration, which are referred to as "artefacts". Briefly explain THREE such artefacts.	[15 marks]
d)	"The Agile Project management framework is supported by a Project Lifecycle (Process)". By briefly drawing the Project Lifecycle explain the process.	[15 marks]
e)	Explain at what point in the project must the stakeholders be prepared to accept that change is inevitable?	[10 marks]
f)	Briefly explain the following terms used in Agile Project Management i. Project Approach Questionnaire ii. DSDM Coach	[15 marks]
g)	"Agile Project Management recommends controlling via a cycle of THREE iterations". Briefly explain them.	[15 marks]

Question 4

a)	Briefly describe the following terms used in Agile environments. i. Weekly Stand-up ii. Close-out meeting iii. Daily Stand-Up	[15 marks]
b)	"Adopting one of the agile approaches which promote 'No design up front' (NDUF) can introduce significant risks". Explain this issue in detail.	[20 marks]

c) Explain why there is a need for risk assessment to be a continuing process from the early stages of requirements engineering through to the operational use of a system. [20 marks]

d) Discuss the view that Agile methods lack maturity and problems remain, as well as opportunities, for improving the process of software construction. [15 marks]

e) Which Agile software development approaches can be matched with the corresponding descriptions given below. [15 marks]

    i. Embraces 5 values to guide development: Communication, Simplicity, Feedback, Courage, and Respect
    ii. Divides the project into short iterations called sprints.
    iii. Optimizes the 'flow' of work in a value-added chain.

f) Your manager would like to introduce exploratory testing to your agile team. How will you proceed with this testing? [15 marks]

Question 5

a) Briefly describe the following terms used in Agile environments. [15 marks]

    i. Automation logs
    ii. The agile task board showing user story and task progress
    iii. Defect tracking tools

b) Given the following user story: "An online ABC courier Company charges customer to ship purchased items, based on the following criteria: [10 marks]

- Standard shipping costs for under 6 items

- Shipping is $5 for 6-10 items.

- Shipping is free for more than 10 items.

What is the best black box test design technique for the user story given? Explain the black box test design technique in detail.

c) 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. What is the best course of action for the tester on this team to take? [10 marks]

d) Provide at least TWO test activities is typically done during agile projects, but is not as common on traditional projects? [20 marks]

e) During a retrospective meeting after a failed sprint, emotions run high as the team members blame each other for the failure. Your role was as an Agile coach and explain what THREE actions you will do in this situation? [15 marks]

f) Assume that in your Agile projects there is sometimes undocumented knowledge or information that is only known by certain project team members, and is usually kept to themselves. Briefly explain such knowledge. [10 marks]

g) Extreme Programming (XP) defines FOUR basic activities that are performed during the software development process. Briefly explain them. [20 marks]

Question 6

A client wishes to set up an internet shopping application. Requirements include the ability of a customer to register with a name, address, payment details and be assigned a unique customer identification. A customer should be allowed to order any item from the site. When an order is completed by a customer the items are either dispatched from stock or placed on back order from a supplier, in either case, the customer is notified. Items dispatched from stock are debited to the customer, items on back order are debited when they are eventually dispatched.

a) Draw suitable UML class diagrams clearly showing a static view of the individual elements and their relationships. [50 marks]

b) Identify the dynamic organisation of objects and messages within the system and draw a UML sequence diagram. The diagram should clearly show the sequence of message flow. [50 marks]

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