

**WISEflow Section 1.**

**Question 1 (50 marks)**

- (a) Your organisation has a very good track record in constructing and providing software solutions dealing with stock management. Due to the considerable experience acquired building such solutions, the company generally adopts an incremental evolutionary approach to development. Due to growing competition and dwindling prices, the organisation now wishes to diversify into other domains where development is relatively less competitive and prices more workable. The new domain of interest for the organisation is control systems. Before taking on a project in this domain, the organisation asks you to draw up a list of issues that would need to be considered and any changes in current development procedure that would need to be implemented. **What recommendations and proposals would you draw up? All your recommendations and proposals need to be logically achieved and justified using concepts, reasoning and principles discussed in class.**

*[22 marks (5-situational overview; 8-identification of procedural changes; 9-reasoning & justification)]*

- (b) Your organisation currently builds and supports software solutions that deal with simple on-line payments to several service vendors. What comprises a good on-line payment solution is well known to the development teams due to the experience they amassed and the expertise they contain by virtue of their members. The strategy of the organisation now points it towards the development of broader solutions that would also be made up of personal wallets, purchase histories, currency conversion, peer-to-peer payments (i.e. payments between solution users and not just users to vendors), market charts and trading services – basically something similar to such systems as “Revolut”. This “wider” type of system is being called a “virtual payment portal” (VPP). In view of the substantial increase in the type of functionality of a VPP solution over a simple on-line payment system, the nature of the systems comprising a VPP will also be more varied. Organisation management wishes to know what development of a VPP will incur in terms of quality expectations to help them decide what sort of skill sets they would need to invest in. **You are asked to provide a fully justified set of qualities that would be needed to be considered for such a system clearly mapped to the functionality that a VPP would need to exhibit. You also need to provide some information regarding the development model(s) that should be adopted to best provide the desired quality. You are furthermore asked to recommend which existing qualities can be reapplied to VPP solutions and in why. Management appreciates the risk involved in such a step and therefore insist that all recommendations proposals are soundly grounded in fact and all reasoning be fully justified - in your case, using concepts, reasoning and principles discussed in class.**

*[28 marks (4-situational overview; 4-quality analysis of existing; 5-quality analysis of projected; 5-development models; 10-overall reasoning & justification)]*

*[Intentional blank space]*

## WISEflow Section 2.

### Question 2 (50 marks)

Always Comply Limited (ACL) is in the business of offering anti money laundering services to several industries in Malta and overseas.

The Chief Compliance Officer (CCO), Mr Joseph Banks has asked you to attend a meeting with him and Ms Valerie Smith who is the Chief Technical Officer. Mr Banks has shared with you that at ACL, all Business and IT projects have to date always followed a Waterfall approach delivery process. Recently in a business seminar, Mr Banks came across the Agile concept for delivering Business and IT projects and has become intrigued by it. He did not really grasp the Agile approach and has asked you to attend a meeting with a view for an opportunity for you to become the Agile consultant of ACL.

To enable you to prepare for the meeting with Mr Banks and Ms Smith, Mr Banks shared with you the following questions (Q1, Q2, and Q3) that are pertinent to this first meeting.

a) – In your own words, explain to Mr Banks and Ms Smith the difference between the Waterfall lifecycle and the Agile lifecycle. In doing so, you must also explain to them the business case for Agile.  
14 marks

b) – You are very aware of the fact that to run an Agile Project, there are several roles and responsibilities that must be occupied by people from the business.

(i) – Which Agile roles must be occupied by people from the business?

4 marks

(ii) – What is the difference between a User Ambassador and a User Advisor and what are their key responsibilities?

9 marks

(iii) – Explain to Mr Banks and Ms Smith why a user involvement strategy is important and what it means.

9 marks

c) – Using your own words explain to Mr Banks and Ms Smiths the different phases of the Agile Process Lifecycle and explain to them in detail why it is important to apply the suitability filter.

14 marks

## WISEflow Section 3.

### Question 3 (50 marks)

Consider a bank account. Say, **you need to formally prove the following three (3) cases** for the software solution for which you are responsible and that will be managing bank accounts. Use formal algebraic specification equivalence descriptions to achieve this.

CASE 1: Withdrawing money from an empty account it will yield an error;

CASE 2: If €100 is paid into an empty account, checking the balance of that account will yield a value of “100”;

CASE 3: Removing €50 from an account containing €50 will result in an empty account.

[50 marks (10-signatures; 16-axioms; 24-proofs)]

\_\_\_\_\_End of exam paper. \_\_\_\_\_