



REFORMED CHURCH UNIVERSITY

FACULTY OF EDUCATION AND SOCIAL SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE IN INFORMATION
TECHNOLOGY

Software Engineering

HICT 106

Part 1 Semester 2 Examination

Total Marks [100]

Date: July 2022

Time: 3 Hours

INSTRUCTIONS

1. This paper has *six (6)* questions
2. Answer any *four (4)* questions
3. Each question carries *25 marks*
4. Start each question on a new page

Question 1

- a) Describe each of the **FIVE** stages of the waterfall model. (10)
- b) Explain the merits and demerits of using an incremental approach to project delivery. (9)
- c) Outline the benefits and problems of using prototypes in a software development project. (6)

Question 2

- a) Examine any **FOUR** types of risks that might be identified in a software project checklist. (12)
- b) Outline the differences between an avoidance strategy and a minimization strategy in project risk management. (8)
- c) Describe any **TWO** business risks that might be identified in a software development project. (5)

Question 3

- a) Examine how the following methods are used in software product maintenance:
 - i) Corrective maintenance;
 - ii) Adaptive maintenance;
 - iii) Perfective maintenance. (15)
- b) Adding a new software feature during maintenance is generally more expensive than it would be for the same feature to be included in the original development phase. Discuss. (10)

Question 4

- a) Assess any **THREE** software validation techniques that can be used to ensure customer requirements are being met. (9)
- b) Analyse **THREE** software verification techniques that can be used to ensure

correct implementation of functionality (9)

c) Explain the possible benefits of a project development strategy that includes an independent test group (ITG) whose primary responsibility is for software testing. (7)

Question 5

a) Analyse the stages that a software product goes through from initial concept to its disposal. (15)

b) Assess the key features of a software repository suitable for use in the control of an incremental development project. (10)

Question 6

a) Explain the process of specifying a major piece of software: the main documents produced, their immediate purpose and their ongoing role in the software life cycle. (10)

b) Outline the role that formal methods can play at each stage of the software life cycle. Explain any disadvantages of the uses of formal methods that you have discussed. (10)

c) Describe the particular difficulties involved in constructing very large software systems, as observed by Curtis et al. List some of the root causes of these difficulties. (5)