

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATION  
RESIT/SPECIAL EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN  
APPLIED COMPUTER SCIENCE**

**COMP 410: SOFTWARE ENGINEERING II**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 01/02/2021**

**11.30 A.M – 1.30 P.M**

---

**INSTRUCTIONS:**

**Answer question one and any other two questions**

**Question One (30 marks)**

- (a) Briefly explain two types of software maintenance activities. (2 marks)
- (b) Briefly, explain the following terms:
  - (i) Reverse engineering (2 marks)
  - (ii) Forward engineering (2 marks)
  - (iii) Re-engineering (2 marks)
  - (iv) Refactoring (2 marks)
- (c) Discuss two reasons why a software system's dependability should be guaranteed. (4 marks)
- (d) Discuss the master slave architecture. (4 marks)
- (e) Explain four reasons why software that is already in use will always have to change. (4 marks)
- (f) Discuss two handover problems associated with software maintenance teams in relation to the initial methodology of development. (4 marks)
- (g) In a sociotechnical system, explain why different stakeholders have different success views. (4 marks)

**Question Two (20 marks)**

- (a) Discuss three advantages of CASE tools. (6 marks)
- (b) Discuss three strategies that can be used to ensure we develop dependable systems. (6 marks)
- (c) Research suggests that the cost of software maintenance contributes 60% of the total software expenses right from development. Discuss any four contributions to this state of affairs in the software industry. (8 marks)

**Question Three (20 marks)**

- (a) Imagine you are implementing a software-based control system. Discuss three circumstances in which it would be appropriate to use a fault-tolerant architecture. (6 marks)
- (b) Why is system integration a particularly critical part of the systems development process? Explain three sociotechnical issues that may cause difficulties in the system integration process. (6 marks)
- (c) Discuss four phases of sociotechnical software system development. (8 marks)

**Question Four (20 marks)**

- (a) Give a brief description of client-server computing. (6 marks)
- (b) Identify three security threats in a banking system. Suggest controls that might be put in place to reduce the chances of a successful attack based on these threats. (6 marks)
- (c) Explain why software systems in all sectors ought to be dependable. (8 marks)

**Question Five (20 marks)**

- (a) Explain the most important dimensions of system dependability. (6 marks)
- (b) Explain why distributed software systems are more complex than centralized software systems. (6 marks)
- (c) Discuss four types of attacks that a distributed system should guard it against. Suggest measures to for dealing with each attack. (8 marks)