



The Co-operative University of Kenya

SPECIAL / SUPPLEMENTARY EXAMINATION AUGUST -2022

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE / BACHELOR OF INFORMATION TECHNOLOGY (YR III SEM I)

UNIT CODE: BCSC 3112 / BCIT 2112

UNIT TITLE: SOFTWARE ENGINEERING

DATE: 5TH AUGUST, 2022

TIME: 2:30 PM – 4:30 PM

INSTRUCTIONS:

- Answer question **ONE (compulsory)** and any other **TWO** questions

QUESTION ONE

- (a) Software Engineering was introduced to the chaos in the design and development of computer program.
- Explain the term software engineering. [2 Marks]
 - Define the term CONCURRENCY, and explain its importance in software design. [2 marks]
- (b) Modularization is known as a practice that revolutionized software development.
- Explain the term SOFTWARE MODULARIZATION. [2 Marks]
 - Give FOUR advantages of modularizing software. [4 Marks]
- (c) As a software designer, your objective is to design quality software which normally yields three levels of design. Describe the THREE (3) levels of software design. [6 Marks]
- (d) Differentiate cohesion from coupling. [4 Marks]

QUESTION TWO

- (a) Briefly discuss the view that modern architectural frameworks promise to dramatically improve developers' productivity and make it easier for those without previous programming experience to develop complex apps. [5 Marks]
- (b) Suppose that a system to modernize welfare payments has failed and you have been approached to develop a favorable concept of a project that allows for benefits to be rolled out or modified as needed, without this becoming another failed “big project”. It is implied that modifications to the existing system are preferred. During discussions with the committee, it is suggested that as a new system feature, a welfare bonus is to be awarded to disabled persons over the age of 85, as well as their caregivers.

As a professional, you however feel that attempting to modify the existing system to meet the new requirements is not worthwhile. Using your experience or knowledge in Software Engineering, describe the process and issues likely to be faced in each of the following scenarios.

- i. Gathering system requirements for the new system
- ii. Justifying the cost of developing a new system all together vs. modifying what already exists.
- iii. Deciding whether changes should be prototyped
- iv. Assessing important system properties such as security, integrity and authenticity
- v. Estimating the cost of the project
- vi. Developing a risk management strategy
- vii. Developing a change management plan [15 Marks]

QUESTION THREE

After 18 months of implementing a software and deploying it at Deans Architects, the team leader told the client that they would have to sign up another contract for software maintenance due to its criticality in the life of software:

- (a) Define the term software engineering and explain why it is critical in the life of any software. [4 Marks]
- (b) Explain the 4 types of software maintenance. [12 Marks]
- (c) Differentiate software validation from verification. [4 Marks]

QUESTION FOUR

The technical aspects of testing relate to the techniques, methods, measurements, and tools used to insure that the software under test is as defect free and reliable as possible for the conditions and constraints under which it must operate.

- (a) Define the term software testing. [2 Marks]
- (b) Explain the following terms as used in software testing [6 Marks]
 - i. Error
 - ii. Fault
 - iii. Failure
- (c) Discuss the two main methods of software testing outlining the advantages and disadvantages of each method. [12 Marks]

QUESTION FIVE

Jaldessa Group is a regional brokerage firm that has been doing well for the last few years. Competition for customers has been intense in the industry for some time now. Large national firms have the financial muscle and many services to offer to the clients. In order to cut a competitive edge, the company implemented a new software that they intend to adapt starting August 2022 from the old manual system in which logistics operations were carried out in physical files.

- a) What is system changeover? [2 Marks]
- b) Using diagrams, explain the 4 main types of system changeover while outlining the advantages and disadvantages of each of them. [12 Marks]
- c) Explain three (3) software implementation challenges. [5 Marks]