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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
THIRD YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN COMPUTER SCIENCE
KCS 300 – FOUNDATIONS OF SOFTWARE ENGINEERING

Date: 04TH December 2023
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)
a) Define the following terms from software engineering:
   i)   portability   (2 Marks)
   ii) Scalability   (2 Marks)
   iii) code refactoring   (2 Marks)
b) Distinguish between "black box software testing" and "white box software testing"   (4 Marks)
c) Explain two software quality assurance goals   (2 Marks)
d) List and explain two non-functional features of software   (4 Marks)
e) Explain two types of prototyping used in software development   (4 Marks)
f) Identify and explain two factors that contributed to the development of software engineering
                                                                                          (4 Marks)
g) KWUST intends to change the main student's management software system that is currently being used. The IT department has sought your advice on the best approach in achieving a smooth transition. Outline three strategies that the department may use.   (6 Marks)

QUESTION TWO (20 MARKS)
a) Requirement analysis is critical phase in any software development project. Peter Awori, a project supervisor, is taking his team through the software requirements phase. Citing five reasons, evaluate the importance of software requirements analysis phase in software development   (10 Marks)
b) Explain two ways you would gather requirements for your project   (4 Marks)
c) As a member of the team, the supervisor has instructed you to come up with Software Requirements Specifications document. Explain three major components you would include in this document
                                                                                          (6 Marks)

QUESTION THREE (20 MARKS)
a) Software development life cycle involves different phases. As a professional software developer, discuss the major phases of software development.   (10 Marks)
b) Explain two types of software maintenance you would undertake in your recently completed software project.   (5 Marks)
c) System testing usually consists of different kinds of testing activities. Discuss two of such methods
                                                                                          (5 Marks)

QUESTION FOUR (20 MARKS)

Every software engineer should be familiar with software project management. As an expert in this field, you have been tasked with leading a team of developers tasked with developing a PSV parking system to alleviate congestion in Nairobi's central business district. The county government has hired you as a project manager to oversee the project from start to finish.

a) Define software project   (2 Marks)
b) List and explain three critical constraints for such a software project   (6 Marks)
c) Explain three major project management activities you will undertake   (6 Marks)
d) List and explain three software management tools which will help in effective project management
                                                                                                                            (6 Marks)

QUESTION FIVE (20 MARKS)

a) Examine the detailed requirements that would normally be included in a system design specification
                                                                                                                            (6 Marks)
b) Explain how standards help the system development process as a system project manager (8 Marks)
c) Explain a system's security requirements and introduce appropriate procedures and precautions
                                                                                                                            (6 Marks)