



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS

THIRD YEAR FIRST SEMESTER

FOR THE DEGREE IN

(COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

COURSE CODE: BIT 314/CSC 311

COURSE TITLE: SOFTWARE ENGINEERING

DATE: 15/11/2022

TIME: 10.00 A.M -11.00 A.M

INSTRUCTIONS

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [30 MARKS]

- a. Explain the term Software Engineering and state any three key challenges that software engineering field is facing today. [4 marks]
- b. What is scope creep and how can it be addressing during software lifecycle. [3 marks]
- c. What are the condition that will prompt a software development company to use waterfall model and type of software are suitable for this model. [5 marks]
- d. You are working with software production firm situated in Bungoma Town. During your orientation the firm manager insisted that your sign software engineering code of ethics and their core mandate document of developing quality software.
- i. Briefly explain any three essential attributes that defines their software product. [3 marks]
- ii. Explain any THREE software engineering code of ethics and professional practices that you may have signed. [3 marks]
- e. Explain why most software companies [likes of Microsoft Corporation, Oracle, Adobe Inc etc.] prefer using of prototyping and incremental process model Incremental process models in their software production. [6 marks]
- f. Lots of things go wrong with systems. Many problems occur because of poor project workmanship, and would occur even with simple system or where aren't involved, but there are some errors that are essentially system-oriented and are usually independent of workmanship. In relation to Peter DeGrace (*Olduvai Imperative*) discuss these errors. [6 marks]

QUESTION TWO [20 MARKS]

- a. What is meant by the following terms and concepts: *Activity*, *Deliverables* and *Milestones* as used in the study of software engineering. [3 marks]
- b. Discuss the THREE major constraints of software project management, in each cases indicate how it affects software quality. [6 marks]
- c. Discuss various ethical dilemma in the field of software engineering. [5 marks]
- d. Explain what is meant by the problem of "*Many Hands*" in software Engineering and discuss how this problem complicates attribution of responsibility. Link this to "THE CASE OF THE KILLER ROBOT" [6 marks]

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QUESTION THREE [20 MARKS]

- a. Differentiate between whitebox and blackbox testing strategies as used in software engineering. [2 marks]
- b. Discuss the following concepts and how they are achieved in Software Engineering :
- i. Software Verification [2 marks]
 - ii. Software Validation [2 marks]
- c. Analyzing and designing a simple management information system of a library using one of the structured methodology and the Object Oriented methodology. The system allows the users to manage books (including adding, deleting, displaying and updating books) and readers (including adding, deleting, displaying and updating readers, borrowing and returning books). Write out the following specifications briefly:
- i. Requirements specification [2 marks]
 - ii. Design specification [2 marks]
- d. Differentiate between CASE and CASE tools as used in software engineering.
- e. Explain the distinction between the Greeks and the Romans during the early life of software engineering.
- e. Discuss the following concepts and how they are achieved in Software Engineering :
- i. Risk identification. [2 marks]
 - ii. Risk Projection. [2 marks]
- f. Once the design phase of system software is completed, there is need for rigorous software testing before it is put into actual use. By citing specific examples, explain any **THREE** categories of tests that a software can undergo. [6 Marks]

QUESTION FOUR [20 MARKS]

- a. i. What is the major distinction between user requirements and system requirements? [2 marks]
- ii. You are working as the software project manager of a team developing COVID-19 scanning System. For each of listed items explain the type of information you will gather when you are investigating the working of the existing system or the requirements for the new system?
- i. Functional requirements [2 marks]
 - ii. Non-functional requirements [2 marks]

- iii. Usability requirements [2 marks]
 - iv. Domain requirement [2 marks]
- b. A company is looking forward to develop a new proprietary software application that can compete amongst the current social media platforms. As the chief Analyst, give an outline of the different stages of requirements engineering you will follow, and discuss the tools and techniques that you would adopt to derive a complete and consistent requirements specification (SRS) document for the company. [10 Marks]

QUESTION FIVE [20 MARKS]

- a. What is feasibility study? Explain any THREE key items one need to consider during feasibility analysis. [6 marks]
- b. Discuss the extent to which the choice of lifecycle models impacts, influences, and determines project test planning and testing techniques. [4 marks]
- c. Compare and contrast the following pairs of software lifecycle models, giving particular attention to the application of tools, techniques, and project life cycle phases as progress is made towards a complete system:
- i. The V-Model and Evolutionary development [5 marks]
 - ii. Extreme programming and Incremental development [5 marks]

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