



(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

END OF SEMESTER EXAMINATION

2021/2022 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATION

FOR THE DEGREE OF BACHELORS OF SCIENCE IN
(INFORMATION TECHNOLOGY & COMPUTER SCIENCE)

COURSE CODE: BIT 314/CSC 311

COURSE TITLE: SOFTWARE ENGINEERING

DATE: 27/05/2022

TIME: 2.00 P.M. – 4.00 P.M.

2HRS

INSTRUCTIONS TO CANDIDATES:

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

Paper Consists of 4 Printed Pages. Please Turn Over ►

QUESTION ONE (COMPULSORY) [30 MARKS]

- a. Define the following terms and concepts as used in the study of software engineering.
- i. Software engineering [1 mark]
 - ii. Reverse engineering [1 mark]
- b. Give **TWO** reasons why analysts rely on automated tools like computer aided systems engineering (CASE- tools). [2 Marks]
- c. Briefly explain the attributes that define a quality software product? [4 marks]
- d. Software engineering as a discipline suffer from many challenges. Discuss any **THREE** of these challenges? [6 marks]
- e. Risk management is an important role of software project management. Explain any **THREE** Risks and risk types that software project managers are likely to encounter. [6 marks]
- f. For each of the following categories, give a briefly explain of what it entails and the type of information you need to gather when you are investigating the requirements for the new Banking Application?
- i. Functional requirements [2 Marks]
 - ii. Non-functional requirements [2 Marks]
 - iii. Usability requirements [2 Marks]
 - iv. Domain requirement [2 Marks]
- g. In the context of software requirements specification SRS:
- i. Contrast verification and validation [2 Marks]
 - ii. Why is verification and validation necessary? [2 Marks]

QUESTION TWO [20 MARKS]

- a. What are the **THREE** successive processes that bring a new system? [3 marks]
- b. Discuss any **THREE** aspect analysts consider during feasibility study. In each case explain tools or techniques used to justify whether the software product is worth undertaken [6 marks]
- c. i. What is Requirement Engineering [2 marks]
- ii. A company is looking forward to develop a new copyrighted software application that can compete amongst the current social media platforms. As Chief Analyst, give an outline of the different stages of requirements engineering, tools and techniques that you will embrace to deliver a complete and consistent requirements specification document to the company.

[9 Marks]

QUESTION THREE [20 MARKS]

- a. Using relevant justification explain the conditions that one will prefer prototyping methods rather than incremental process model. [4 marks]
- b. Many things usually go wrong with systems. Some occur due to 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]
- c. Microsoft Corporation is one of the leading company whose task is to develop and delivery software products to its consumers explain how the Company collects its user requirements and why the company does NOT rely on waterfall process models in its software production. [10 marks]

QUESTION FOUR [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]
- d. Discuss various ethical dilemma in the field of software engineering. [5 marks]
- e. 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]

QUESTION FIVE [20 MARKS]

- a. Differentiate between whitebox and blackbox testing strategies as used in software engineering. [2 marks]
- b. State any FOUR reasons why software testing is important. [2 Marks]
- c. Discuss any TWO software maintenance strategies used by Microsoft Corporation on their products. [4 marks]
- d. Explain in terms of approach to the solution:
- i. Structured designs [2 marks]
 - ii. Object oriented designs [2 marks]

iii. Agile or Ad hoc methodologies

[2 marks]

- e. Project Management is concerned with the activities involved in ensuring that software and other information technology related projects are delivered on time and on schedule and also in accordance with the requirement of the organizations' developing and procuring the software. Discuss how time, schedule and resources can affect the quality attributes of software product.

[6 Marks]