



*(KNOWLEDGE FOR DEVELOPMENT)*

**KIBABII UNIVERSITY  
(KIBU)**

**UNIVERSITY EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS  
SECOND YEAR FIRST SEMESTER**

**FOR THE DEGREE IN**

**(COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)**

**COURSE CODE: BIT 314/CSC 311**

**COURSE TITLE: SOFTWARE ENGINEERING**

**DATE: 07/01/2022**

**TIME: 11.00 A.M- 1.00 P.M**

**INSTRUCTIONS**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

**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. Explain the meaning of **scope Creep** pointing out its adversary effects in a software production. [4 Marks]
- c. What are the **TWO** main reasons why analysts rely on automated tools like computer aided systems engineering (CASE- tools). [2 Marks]
- d. Briefly explain the attributes that define a quality software product? [4 marks]
- e. Software engineering as a discipline suffer from many challenges. Discuss any **THREE** current challenges? [6 marks]
- f. 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]
- g. 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. Non-functional requirements [2 Marks]
  - ii. Usability requirements [2 Marks]
- h. In the context of software requirements specification SRS:
- i. Contrast verification and validation [2 Marks]
  - ii. Why is verification and validation process necessary? [2 Marks]

**QUESTION TWO**

**[20 MARKS]**

- a. Explain the **THREE** major constraint of a software project quality and how project management skill can be applied to optimize these constraints. [4 marks]
- b. What are the **THREE** successive processes that bring a new system? [3 marks]
- c. Discuss any **THREE** aspect analysts consider during feasibility study. In each case explain tools and techniques used to justify whether the software product is worth undertaken [6 marks]
- d. A company is looking forward to develop a new copyrighted and open source software applications that can compete amongst the current social media platforms. You are hired as

Chief Analyst for initial investigation and analysis. Give a detailed outline of the different stages of requirements engineering, tools and techniques that you will embrace to deliver a complete and consistent requirements specification document (SRS) to the company.

[7 Marks]

### QUESTION THREE

[20 MARKS]

- a. Using relevant justifications explain the conditions that one will prefer prototyping methods rather than incremental process model. [4 marks]
- b. Microsoft Corporation, Oracle, Adobe Inc. etc. are some of the leading companies whose tasks are to develop and delivery software products to its consumers explain how these Companies collects its users' requirements and why these company do NOT rely on waterfall process models in software production. [8 marks]
- c. When you are assessing a legacy/old system, you have to look at it from a **business perspective** and a **technical perspective**. From a business perspective, you have to decide whether the business really needs the system. From a technical perspective, you have to assess the quality of the system and its related support software and hardware. You then use a combination of the business value and the system quality to take one of the following informed decisions: scrap the system, re-engineer the system, replace the system, or continue the system's maintenance. Assume that you assessed four systems and the results of the assessment are as follows:

System A: high quality, low business value  
System B: high quality, high business value  
System C: low quality, low business value  
System D: low quality, high business value

What would be your recommendations for each of these systems? Justify your decisions.

[8 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. Discus the THREE major constraints of software project management, in each cases indicate how it affects software quality. [6 marks]
- d. Discus 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 may affect the software product and the role of individual in production cycle. [ 6 marks]

**QUESTION FIVE**

**[20 MARKS]**

- a. There has been a notion that software design is expensive and require time. Justify this claim. [2 marks]
- b. Do you think usability and domain requirements are important in software lifecycle? Explain. [2 marks]
- c. Explain in terms of approach to the solution:
- i. Structured designs [2 marks]
  - ii. Object oriented designs [2 marks]
  - iii. Agile and Ad-hoc methodologies [2 marks]
- d. Differentiate between whitebox and blackbox testing strategies as used in software engineering. [2 marks]
- e. Discuss any **THREE** software maintenance strategies used by Microsoft Corporation on their products. [6 marks]