



(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR FOUR SEMESTER TWO EXAMINATIONS
FOR THE DEGREE OF
BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE: CSC 467

COURSE TITLE: SOFTWARE METRICS

DATE: 18/02/2021

TIME: 2.00 P.M-11.00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

- a. Function point analysis is a preferred size metric over Lines of code. Explain **[5 Marks]**
- b. Data concerning a system to be developed can be collected through several ways. Explain four ways in which data can be acquired **[4 Marks]**
- c. Standardizing definitions for the entities and their measured attributes is an important step in software metrics. Using a relevant examples, state the reason. **[4 Marks]**
- d. Discuss the motivation behind the use of metrics in software projects **[5 Marks]**
- e. Describe the qualities of good data to be used to perform experiments **[6 Marks]**
- f. Describe THREE different approaches to estimating duration for a system development project stating an advantage for each **[6 Marks]**

QUESTION TWO [20 MARKS]

- a. Define the term reliability? **[2 Marks]**
- b. As reliability increases system efficiency tends to decrease. Explain. **[2 Marks]**
- a. Describe in detail about Goal Question Metric paradigm and its implementation. **[12 Marks]**
- b. How do software process metrics differ from software project metrics? **[4 Marks]**

QUESTION THREE [20 MARKS]

- a. Why it is difficult to measure Information Technology costs **[3 Marks]**
- b. Discuss the following terms with reference to experimental design:
 - i. Randomization **[2 Marks]**
 - ii. Local control **[4 Marks]**
 - iii. Replication **[2 Marks]**
- c. Describe the guidelines for evaluating the appropriateness of data to be used for answering questions in experimental design. **[3 Marks]**
- d. Use the following table of functional units with weighting factors to answer the following question:

Functional units	Weighting factors		
	Low	Average	High
External Inputs (EI)	3	4	6

External Outputs (EO)	4	5	7
External Inquiries (EQ)	3	4	6
Internal Logical Files (ILF)	7	10	15
External Interface Files (EIF)	5	7	10

A given project has 7 user inputs, 15 user outputs, 8 inquiries, 7 logical files and 2 external interfaces. All of these are average complexity EXCEPT 4 of the inputs are complex, 7 of the outputs are complex and 3 of the outputs are simple. Calculate unadjusted function points.

[6 Marks]

QUESTION FOUR [20 MARKS]

- a. Explain why operational profile is necessary when dealing with software and describe the five steps involved in developing operational profile for a system. **[12 Marks]**
- b. Defect tracking is of much importance in software development. Discuss. **[6 Marks]**
- c. Differentiate between failures and faults **[2 Marks]**

QUESTION FIVE [20 MARKS]

- d. Using software metrics is advantageous to a software project manager. Justify **[10 Marks]**
- e. Discuss five resources required when costing software development projects and their implication in project success **[10 Marks]**