(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR FOUR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE
(COMPUTER SCIENCE)

COURSE CODE   :   CSC 462E

COURSE TITLE   :   SOFTWARE METRICS

DATE: 14/11/2022   TIME: 02.00 A.M – 04.00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

a) i. An attribute is a property of an object in the real world. Differentiate between internal and external attributes of an object. [2 marks]

ii. With reference to the entity "*Code*", state the attribute and possible measure of the attribute. [2 marks]

iii. Distinguish between a measure and measurement [2 marks]

b) KRA- is in the process of implementing metrics in its operations.

i.Explain how would you convince KRA to adopt software metrics in the evaluation of their software systems? [6 marks]

ii. What are some of the problems KRA would experience in software measurement? [3marks]

(c) Quality is an essential attribute of a product or service produced/provided by an organization Explain any four quality metrics that may be used to evaluate the quality of a product. [8marks]

(d) Discuss any two classes of metrics from a commercial perspective. [4 marks]

(e) Complete the table given by stating at least TWO attributes of each entity. [3 marks]

Entity	Attribute
Design	
Requirements	
Specification	

QUESTION TWO [20 MARKS]

a) An organization that intends to incorporate metrics in the evaluation of its software systems must adhere to certain guidelines. Discuss these metric guidelines.   [10 marks]

b) i. Software metrics are different from just testing for errors because they can provide a wider insight into the software system. Explain some of the insights Huduma Center can derive from using software metrics in software systems.   [10 marks]

QUESTION THREE [20 MARKS]

a) In software development, one of the metrics used to measure the cost of effort is LoC (lines of code) and FP (function point). Discuss why you opt for the LOC approach as compared to the FP approach.   [10marks]

b) i. What do you understand by GQM?   [2 marks]

ii. As a Chief Information Officer in charge of systems in an organization, Explain the importance of GQM.   [6 marks]

iii. State any two characteristics of software metrics data collected.   [2 marks]

QUESTION FOUR [20 MARKS]

Discuss the following metrics: as applied OO

i) Requirements metrics   [5 marks]

ii) Design metrics   [5 marks]

iii) Process metrics   [5 marks]

iv) Product metrics   [5 marks]

QUESTION FIVE (20 MARKS)

a) Distinguish between:

    i. fault and failure.   [2 marks]

    ii. direct and indirect attribute   [2 marks]

b) The table below is the application of GQM where a *Question* has been asked. Complete the questions with the possible metrics.

[14 marks]

S/No	Question	Possible Metric
1	What is the level of requirements stability?	
2	Why are the requirements changed?	
3	What is the cost of changing the requirements?	
4	Is the number of changes to requirements decreasing with time?	
5	How many incomplete, inconsistent, and missing, allocated requirements are identified?	
6	How many other requirements are affected by a requirement change?	
7	Is the number of to be done (TBD)	

(05)