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MAIN EXAMINATION
SEPTEMBER- DECEMEBR TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

REGULAR PROGRAMME

DIT015: INTRODUCTION TO SOFTWARE ENGINEERING

Date: APRIL 2024	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1. a) Differentiate between the following **TERMS** as used in Software Engineering. **(6marks)**

I. Software Engineering and System Engineering
II. Cohesion and coupling
III. Validation and Verification

b) Discuss the relevance of the three principles of User Interface design known as "Minimal Surprise", "Recovery", and "Consistency" and give an example of how each would be applied in the design of a simple software editing tool. **(3 marks)**

c) Using **ANY** software development methodology, discuss with an aid of a well labelled diagram, the steps followed in software development lifecycle. **(5 marks)**

d) Define the term "changeover" and Explain **THREE** strategies followed for changeover of the system during implementation phase. **(5 marks)**

e) Distinguish between the following terms for describing bugs. **(3 marks)**

i). Fault
ii). Failure
iii).Error

f) Discuss the factors you would consider when determining the best software development Methodology to use in implementation system under consideration. **(5 marks)**

g) Explain the Relationship between Software Engineering and the following disciples. **(3 marks)**

I. Management science
II. Artificial intelligence
III. Programing Language

Q2. a) Distinguish between "project" and "process" metrics. Give examples. **(4 marks)**

ii). Principles apply to process and products. They become practical through methodology, tools and techniques. Discuss any **SIX** principles used in software engineering. **(6 marks)**

b) Describe the factors that influence the quality of software product. **(3 marks)**

c) Define software module and describe any **THREE** types of software modules. **(4 marks)**

d) Draw a Data Flow Diagram (DFD) to show the computation bellow. **(3 marks)**

(a + b) * (c + a*d)

Q3. a) Describe SWOT analysis. **(3 marks)**

b) i) Explain what is a prototype and why it is developed. **(3 marks)**

ii). By use of a well **labelled diagram**, explain how throwaway Prototype methodology works. **(6 marks)**

iii).Clearly explain **TWO** advantages and disadvantages of prototype methodology. **(4marks)**

c) Explain the **FOUR** types of maintenance that can be performed during the software development phase. **(4marks)**

Q4. a) i) Explain the term software specification. **(4marks)**

ii) State and explain **FOUR** characteristics of a good software specification? **(4marks)**

b) Explain **THREE** uses of software specification. **(6marks)**

c) Suppose you are in charge of the inspection team of your organization's software development project. Discuss the various team members and their respective roles that you would invite to the team**. (6marks)**

Q5. a) Define Software verification and Explain **TWO** approaches used for Software verification. **(6marks)**

b) i) State and explain the challenges that are facing software engineers in the 21st Century. **(6marks)**

ii) In the context of software testing, discuss the following testing strategies **(4marks)**

i. Black box testing
ii. White box testing
iii. Unit testing
iv. Stress testing

c) Assuming you are a member of a project team developing Library information system for Catholic university of Eastern Africa CUEA, come up with DFD showing how data will flow within that system. **(4 mark)**

******GOOD LUCK******