THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 311: FUNDAMENTALS OF SOFTWARE ENGINEERING

Date: DECEMBER 2018	Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

Q1.   a)   List and **explain** any FOUR essential attributes of *good software*
(4 Marks)

b)   **Differentiate** between *Generic* and *Customized* products as used in Software production   **(4 Marks)**

c)   **Discuss** any THREE principles of *agile* methods   **(6 Marks)**

d)   Using examples, **explain** any TWO *types* of *requirements*   **(4 Marks)**

e)   **Discuss** the *Software Development Life-cycle* (SDLC) in details.
(6 Marks)

f)   **Differentiate** between *verification* and *validation* as used in software development   **(2 Marks)**

g)   Compare and contrast between a Systems Analyst and a Systems developer   **(2 Marks)**

h)   Distinguish between functional and non-functional requirements.
(2 Marks)

Q2.   a)   Choose any piece of software which you use regularly. Briefly describe the **requirements** that the software meets(for you as the user). Suggest TWO ways in which the software could be **improved** (for you), and *estimate* the

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amount of **resources** that would be required to make the improvements.
(6 Marks)

b) Discuss any FOUR software engineering fundamentals that apply to all types of software systems **(4 Marks)**

c) Explain what is meant by software project management. Highlight the most vital skills required of a project manager. **(4 Marks)**

d) Compare and Contrast between System testing, Acceptance testing and Component testing as used in Software Engineering. **(6 Marks)**

Q3. a) **Explain** the software engineering *code of ethics*. What is its **role** and **usefulness**? **(3 Marks)**

b) **State** THREE benefits of writing tests before writing the code. **(3 Marks)**

c) **Explain** *feasibility study* as used in software development. **(2 Marks)**

d) Software engineering has been described as a "*soft*" engineering discipline but nonetheless an engineering discipline on its own merit. By giving concise examples from the discipline, **explain** why this is so.
(6 Marks)

e) **Discuss** any THREE advantages of *sketching* a proposed *user interface*.
(6 Marks)

Q4. a) **Explain** the THREE generic *process models* used in software engineering. **(6 Marks)**

b) **Discuss** any FOUR methods a Systems Analyst can use for *Requirements gathering* purposes. **(8 Marks)**

c) What stage/phase is good for doing *prototyping* in the software development process? Explain why. **(2 Marks)**

d) **Discuss** the similarities and differences between *user* and *system requirements*. **(4 Marks)**

Q5. a) Discuss the main activities performed at the requirements engineering stage. **(4 Marks)**

b) It is cheaper and faster to fix known bugs before you write new code. Give TWO reasons Why this is the case. **(4 Marks)**

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c)   Using examples, explain **CASE tools** as used in Software Engineering.
(4 Marks)

d)   You have been asked to develop the Catholic University Cafeteria Enquiries and Orders Information Management System (**CUCOMIS**)
The client wants development of a new management information system (MIS) to enable multi-user data entry and querying. It is expected that the system will encompass the following areas:
- ➢ User friendly interface
- ➢ Data entry validation
- ➢ Defined reports, especially job control sheets, which the client already uses on paper
- ➢ Querying of data to produce reports.

The client has a Microsoft SQL server database management system that supports Intranet access from several desks.
The development models suggested for this project are: **incremental development** using a series of *prototypes* and **waterfall model** with *progression* through analysis, design, coding, testing and maintenance.

Determine the *suitability* of each of these two life cycles models for this project. Use appropriate examples/illustrations to support your answers.
(8 Marks)

END

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