



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

GABA CAMPUS - ELDORET

MAIN EXAMINATION

JANUARY – APRIL 2023

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

CMT 311: FUNDAMENTALS OF SOFTWARE ENGINEERING

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DATE: April 2023

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

Q1.

- a) Define the term software engineering (2 Marks)
- b) Software engineering principles use two important techniques to reduce problem complexity. State and explain the techniques used. (4 Marks)
- c) Differentiate between component testing and systems testing (4 Marks)
- d) State three general characteristics of a good software (3 Marks)
- e) List four challenges facing software Engineers (4 Marks)
- f) Discuss the generic activities common to all software processes. (4 Marks)
- g) In your own language, explain why you think software project management is essential for software development. (4 Marks)
- h) Explain the term “scalability” as used in software engineering (2 Marks)
- i) Highlight major constraints for software projects. (3 Marks)

Q2.

- a) Discuss requirement engineering process. (8 Marks)
- b) Differentiate between functional requirement and non-functional requirements giving examples where possible. (4 Marks)
- c) Describe four software cost estimation techniques. (8 Marks)

Q3.

- a) Discuss whether managing Software engineering projects is any different to the management of projects in other sectors of society today. **(8 Marks)**
- b) After a major release of a software system, there often follows a period of corrective maintenance. Discuss why this can occur and how it could be avoided or if it is inevitable. **(4 Marks)**
- c) Discuss four sources of changes in software requirement. **(4 Marks)**
- d) Differentiate between the following terms Quality assurance and Quality Control? **(4 Marks)**

Q4.

- a) You are recently gained employment in a large organization which is seeking to improve their software development processes and, by so doing, gain international recognition.

Present an outline of a continuous process improvement framework that might be adopted by the organization. You should highlight in your answer, the possible benefits and challenges that may result. **(8 Marks)**
- b) Discuss the following quality factors in software engineering **(4 Marks)**
 - i) Portability
 - ii) Usability
- c) Discuss four professional issues that should be taken care of by a software engineer **(8 Marks)**

Q5.

- a) Suppose you been employed as a project manager in a large organization which is seeking to improve their software development processes. Discuss some of the major management activities that you may intend to carry out during the project development exercise. **(6 Marks)**
- b) State at least two techniques for requirement elicitation. **(2 Marks)**
- c) Write short notice on the following:
 - i) Effort estimation. **(2 Marks)**
 - ii) Time estimation. **(2 Marks)**
- d) Explain the requirement elicitation process. **(8 Marks)**

END

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