



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTIT 11M, Y4 SI)

EIT 4407: SOFTWARE ARCHITECTURE

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Attempt question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

- a) Explain the various stakeholders for software architecture. (4 marks)
- b) Explain the following terms:
- (i) Externally visible properties of components (2 marks)
 - (ii) Software architecture is an abstraction (2 marks)
 - (iii) Architectural structure (2 marks)
 - (iv) Relations (2 marks)
 - (v) Abstraction layering (2 marks)

- c) Outline at least THREE standard architectures
- d) Describe TWO issues that have contributed to the need to have software architecture. **(4 marks)**
- e) State TWO differences of software and hardware architecture. **(2 marks)**
- f) State TWO similarities of software and hardware architecture. **(2 marks)**
- g) Architectural style defines a family of systems in terms of a pattern of structural organization outline two roles it determines **(4 marks)**
- h) Using an appropriate diagram, explain the repository style by including the components and connectors. **(4 marks)**
- i) List TWO examples of Repository style. **(4 marks)**

Question Two

- a) Describe the pipe and filter specializations. **(4 marks)**
- b) List two pipe and filter example **(4 marks)**
- c) Outline FOUR advantages of pipe and filter architecture **(4 marks)**
- d) State at least TWO concerns for each of the software architecture stakeholders. Ensure to include at least FOUR of the stakeholders concerns. **(8 marks)**

Question Three

- a) Describe FOUR software architecturing process. **(4 marks)**
- b) Define a software architecture patterns. **(2 marks)**
- c) Explain FOUR reasons why we need to use architectural patterns **(4 marks)**
- d) Write short notes on early compilers architectures with an appropriate diagram. **(7 marks)**

Question Four

- a) Explain with the help of suitable diagram, Architectural Trade-Off Analysis Method (ATAM) **(10 marks)**
- b) Define Architectural analysis **(2 marks)**
- c) Discuss various analysis goals with an example. **(8 marks)**

Question Five

- a) Discuss an Architectural conception in absence of experience. **(10 marks)**
- b) Explain the existing frameworks for the pipe-and-filter Architectural style. **(10 marks)**