



# TECHNICAL UNIVERSITY OF MOMBASA

## FACULTY OF ENGINEERING AND TECHNOLOGY

### DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

#### UNIVERSITY EXAMINATION FOR:

BTIT/SEP 2014/J-FT

**EIT 4407: SOFTWARE ARCHITECTURE**

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**DATE: Sep 2018**

#### **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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#### **Question ONE (30 Marks)**

- a) Define the term
  - i. Software architecture (1 mark)
  - ii. URI (1 mark)
  - iii. ROOM (1 Mark)
  - iv. Architectural style, (1 Mark)
- b) Describe two elements of Software Architecture (2 marks)
- c) Explain the key principles of the component-based style (4 marks)
- d) Explain the main reasons why software architecture is important (3 marks)
- e) State three goals and three limitations of software architecture (6 marks)
- f) Briefly describe the three major parts of blackboard model (3 marks)
- g) Describe two architectural bases of the WWW (2 marks)
- h) Explain the main purpose of OMA (3 marks)
- i) Outline three benefits of ATAM (3 marks)

**Question TWO (20 Marks)**

- a) Describe three areas of expertise required by a software architect (6 marks)
- b) With the aid of a diagram show the relationship between identifier, resource, and representation in WWW architecture. (6 Marks)
- c) Distinguish between Object-Oriented Architectural Style and Event-driven architecture styles (4 marks)
- d) State the responsibilities of architectural style (2 marks)
- e) Identify the main requirements to consider to be considered during the design and development of a concise formal system model for componentware. (2 marks)

**Question THREE (20 Marks)**

- a) With the help of a diagram outline various layers of WWW architecture. (10 Marks)
- b) Describe the Supported Quality Attributes of CORBA (4 Marks)
- c) Explain the importance of CORBA (3 marks)
- d) Identify three ways in which applications benefits from using the OMA: (3 marks)

**Question FOUR (20 Marks)**

- a) Outline at least six steps carried out in ATAM. (6 marks)
- b) Briefly describe four key principles of the object-oriented architectural style (4 marks)
- c) Outline three properties characterized by systems which ROOM may be applied (3 marks)
- d) Distinguish between Data flow architectures and Data-centered architecture (4 marks)
- e) Describe the significant of ATAM in software engineering (3 marks)

**Question FIVE (20 Marks)**

- a) Outline the benefits of URI (2 Marks)
- b) Briefly describe two essential characteristics of componentware (2 marks)
- c) Distinguish between the following architectural styles
  - i). Data flow architectures and Data-centered architecture (4 marks)
  - ii). Client/Server Architectural Style and Layered Architectural Style (4 marks)
- d) Describe at least two of the three divisions of hierarchical architecture style, advantage and disadvantage of each. (8 marks)