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[*Knowledge for Development*]

**KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
2015/2016 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS  
YEAR ONE SEMESTER TWO EXAMINATIONS**

**FOR THE MASTER OF SCIENCE IN  
INFORMATION TECHNOLOGY**

**COURSE CODE : MIT821**

**COURSE TITLE : ENTERPRISE APPLICATION  
DEVELOPMENT AND ARCHITECTURE**

**DATE: 15/05/2016**

**TIME: 9.00 AM-11.00AM**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO**

### Question 1

**(20 marks)**

- a) Explain what xml is? [1 mark]
- b) One important requirement for an xml document is that it must be well formed. Consider the following email structure.

```
<message>
  <to>you@yourAddress.com
  <from>me@myAddress.com</from>
  <subject>XML Is Really Cool
  <text>
    How many ways is XML cool? Let me count the ways
  ...
  </to>
  </subject>
  </text>
</message>
```

State with reasons whether it is well formed or not. If it is not well formed re-write the structure so that it is well formed. [5 marks]

- c) Discuss the evolution of the following application architectures, highlighting the condition each was meant to address, the problem each solves and the problem each introduces:

[14 marks]

- i. Mainframe
- ii. Desktop
- iii. 2-tier client/server
- iv. Multi-tier client/server
- v. Service Oriented Architecture

### Question 2

**(20 marks)**

- a) Discuss the properties that characterize object oriented programming.
- b) Describe the principle of information hiding in Java and explain how it facilitates the Software Engineering property of modularity
- c) A library requires a program to capture and store details about books in the library. For each book, the following is captured:
- ISBN
  - Author
  - Title
  - Number of pages
  - Price (in Ksh)
  - Year of publication
- i. Write a class called Book with suitable methods to model the library books. Include in your class a **toString** method that returns the details about a book.

- ii. Write a driver program a code segment that creates an instance of the Book class in part (a) above and calls the **toString** method on the object. Show the output of the call.

**Question 3** **(20 marks)**

Layering is one of the most common techniques that software designers use to break apart a complicated software system. Discuss layering with respect to enterprise applications highlighting the benefits, downsides and evolution.

**Question 4** **(20 marks)**

- a) Give a detailed and clear description of some of the characteristics of enterprise systems applications
- b) Write short notes on each of the following concepts in the context of enterprise application development and architecture
  - i. Component-Based Development
  - ii. n-Tier Application Development using Web Services
  - iii. Load balancing and Tuning
  - iv. Distributed Object Technologies

**Question 5** **[20 marks]**

- a) Discuss three primary attributes of an enterprise application and summarize requirements that all enterprise applications must meet. **[8 marks]**
- b) Outline the Enterprise Application Model and discuss clearly the interactions among each of its sub-models. **[8 marks]**
- c) Explain the role of business requirements in designing and developing enterprise applications. **[4 marks]**