



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017

**THIRD YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN INFORMATION
TECHNOLOGY**

MAIN CAMPUS

CIT 304: INTEGRATIVE PROGRAMMING TECHNOLOGIES


Date: 8th June, 2017

Time: 8.30 - 11.30 am

INSTRUCTIONS:

- Answer ALL questions in SECTION A and any other TWO from SECTION B
- Use a NEW PAGE FOR EVERY QUESTION attempted, and indicate number on the space provided on the page of the answer sheet.
- Fasten together all loose answer sheets used.
- Mobile phones and PDAs are NOT allowed in the examination room.

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SECTION A: COMPULSORY

QUESTION ONE (30 Marks)

- a) Layered architectural models are used in intersystem communication. State two purposes of the layered models (2 marks)
- b) Define Middleware and state its functions in intersystem communications (4 marks)
- c) Explain how web services aims to address the limitations of object oriented middleware (4 Marks)
- d) Highlight the two main checks that an XML processors makes when checking an xml document (4 marks)
- e) Explain the following as used in integrative programming and state its significance
- (i) A design pattern (3 marks)
- (ii) Reason why design patterns are used (4 marks)
- f) Differentiate between Server-side Scripting Languages and Client-side Scripting Languages giving suitable examples (6 marks)
- g) Many vulnerabilities in software result from poor programming practises. Highlight any three software related flaws (3 marks)

QUESTION TWO (20 Marks)

- a) Compare and Contrast the Two-tier architecture model and the N-Tier architecture models while citing the advantages and disadvantages of each (10 marks)
- b) An XML document with correct syntax is called "Well Formed" while An XML document validated against a DTD is "Well Formed" and "Valid". Below is an Illustration

An XML Document with a DTD (example4.xml)

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/css" href="css1.css"?>
<!DOCTYPE document
[ <ELEMENT document (heading, message)> <!ELEMENT heading
(PCDATA)> <!ELEMENT message (PCDATA)>
]>
<document>
<heading>Hello From XML </heading> <message> This is an XML
document! </message>
</document>
```

Explain the purpose of DTD

(2 marks)

- c) State four reasons why XML Schemas will be used in most Web applications as a replacement for DTDs. (8 marks)

QUESTION THREE (20 Marks)

Discuss the following architectures for integrating systems, in each case stating the advantages and disadvantages

- a) CORBA (5 marks)
- b) RMI (5 marks)
- c) COM (5 marks)
- d) MOM (5 marks)

QUESTION FOUR (20 Marks)

- a) Give two reasons why there is need for XML Validator (2 marks)
- b) Explain the Role of Extensible Markup Language (XML) in Distributed Computing (6 marks)
- c) Explain how XSLT Works and how it transforms an XML document into another XML document, recognized by a browser, like HTML and XHTML. (6 marks)
- d) State three uses of Web Services in integrating systems (6 marks)

QUESTION FIVE (20 Marks)

- a) Explain the relationship of Web Services to other middleware (4 marks)
- b) Discuss the following programming paradigms in relation to integrative programming
 - (i). Imperative (4 marks)
 - (ii). Non-Imperative (4 marks)
 - (iii). Procedural (4 marks)
 - (iv). Functional (4 marks)