



(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATION
YEAR THREE SEMESTER TWO EXAMINATIONS
FOR THE DEGREE OF BACHELORS OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 323

COURSE TITLE : INTEGRATIVE PROGRAMMING

DATE: 26/04/2023 TIME: 09.00 A.M.-11.00 A.M. 2HRS

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

- a) Explain why a good background in programming languages is an important step in integrative programming and technology [4 marks]
- b) Explain at least FOUR reasons for Studying Concepts of Programming Languages [4 marks]
- c) Explain various Programming Domains that have led to evolution programming paradigms and languages that have necessitated integration process. [4 marks]
- d) Explain any FOUR Language Evaluation Criteria or techniques [4 marks]
- e) Explain the current trends between compiled and translated languages [4 marks]
- f) Explain the meaning of a distributed system and state at least FOUR important characteristics of such a system. [4 marks]
- g) Information Technology Architecture is used to implement an efficient, flexible, and high quality technology solution for a business problem, and is classified into three different categories. State and explain these categories. [6 marks].

QUESTION TWO [20 MARKS]

- a) What is the role of Middleware in Distributed Systems? [2 marks]
- b) What is Distributed Component Object Model DCOM? Explain the service provided by each of its TWO main parts or Components. [6 marks]
- c) Discuss any THREE the role of **versioning** and **version control** in integrative programming [6 marks]
- d) By discussing the key features of Web Services, compare and contrast Web Service with other Distributed technologies. [6 marks]

QUESTION THREE [20 MARKS]

- a) Briefly, explain the techniques used in scripting. [2 marks]
- b) Discuss the role of following Technologies as applied in web services:
- i. XML(Extensible Markup language) [2 marks]
 - ii. SOAP(Simple Object Access Protocol) [2 marks]
 - iii. HTTP [2 marks]
 - iv. UDDI(*Universal Description, Discovery and Integration*) [2 marks]
 - v. WSDL(*Web Service Description Language*) [2 marks]

- c) The PI provides information regarding the way in which the XML file should be processed. The PI statement can be written as: `<?xml version="1" encoding="UTF-8" ?>`. In relation to XML and this example, explain.
- i. What the this PI states [2 marks]
 - ii. Tag [2 marks]
 - iii. Elements [2 marks]
 - iv. Content [2 marks]

QUESTION FOUR [20 MARKS]

- a) What are the advantages of SOAP? [2 marks]
- b) Explain the role of CORBA-IDL and Web Services [4 marks]
- c) Explain the role and application of :
 - i. Web services and Middleware [3 marks]
 - ii. Network programming [3 marks]
 - iii. Message and queuing services [3 marks]
 - iv. Low level data communications [3 marks]

QUESTION FIVE [20 MARKS]

- a) Using an appropriate syntax, explain a JSON Object [2 marks]
- b) Explain the following concepts in relation to object oriented design
 - i. Design patterns [2 marks]
 - ii. Interface [2 marks]
 - iii. Inheritance [2 marks]
- c) Explain how the following security practices are achieved in both distributed systems and integrated technologies
 - i. Evidence-Based Security [2 marks]
 - ii. Code Access Security [2 marks]
 - iii. Authentication to system Resources and Services [2 marks]
- d) Differentiate between SGML, HTML and XML using relevant illustrations [6 marks]