



NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
COMPUTER SCIENCE DEPARTMENT
2024 1 EXAMINATION

CIT 421: NET-CENTRIC COMPUTING

Credit: 3 units

INSTRUCTION: Answer Four (4) Questions.

Question one is Compulsory

Question 1

- 1a. Explain the concepts of Remote Method Invocation (RMI). (3 marks)
- 1b. Explain the process of connecting Bluetooth technology. (3 marks)
- 1c. Examine well-known parallel programming models (9 marks)
- 1d. Mobile and wireless Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link. Discuss some of these wireless/mobile computing technologies you know. (10 marks)

Question 2

- 2a. Highlight the mobile communication infrastructures to ensure seamless and reliable communication and facilitate state services. (2 marks)
- 2b. Examine the functions of object registry in The Java RMI Architecture (3 marks)
- 2c. The benefits of WLAN cannot be underestimate from other technologies. Identify and explain these benefits. (10 marks)

Question 3

- 3a. What did you understand by message passing in computer communication? (4 marks)
- 3b. Examine High performance local area network (HIPERLAN). (5 marks)
- 3c. Highlight the API for the Java RMI in Remote Method Invocation (RMI). (6 marks)

Question 4

- 4a. In message-passing system, an information has to be provided to the message passing system to specify the message transfer. Highlight these information. (5 marks)
- 4b. The wireless automated teller machine (WATM) system reference model, proposed by ATM Forum Wireless ATM (WATM) group, specifies the signaling interfaces among the mobile terminal, wireless terminal adapter, wireless radio port, mobile ATM switch and non-mobile ATM switch. Identify the components of WATM. (4 marks)
- 4c. Discuss the following elements briefly in Remote Method Invocation (RMI). (6 marks)

- i) The Object Server
- ii) The Naming class
- iii) The RMI Registry
- iv) The Client-side Software
- v) Looking up the remote object

Question 5

5a. Discuss message-passing and its features in communication system. (5 marks)

5b. Give an algorithm of how you can model a physical database. (4 marks)

5c. A **distributed transaction** is a **database transaction** in which two or more network hosts are involved in the **transactions**. Usually, hosts provide **transactional resources**, while the **transaction manager** is responsible for creating and managing a **global transaction** that encompasses all operations against such resources. Explain the underline words. (6 marks)

Question 6

6a. Identify the usefulness of UML component diagrams. (2 marks)

6b. Examine the types of interface in UML component diagram. (4 marks)

6c. SPMD mode is a method of parallel computing, its processors run the same program, but execute different data. Examine SPMD operation mechanism with its merits and demerits. (9 marks)