National Open University of Nigeria
FACULTY OF COMPUTING
Department of Computer Science
2024_2 EXAMINATION

CIT711 - Computer Fundamentals Examination
Instruction: Answer Question 1 and any other three questions
Time Allowed: 2 ¾ hours

Question 1:
   a. (i) Briefly explain the difference between a local area network (LAN) and a wide area network (WAN).   *3 marks*
        (ii) State three objectives for studying operating systems   *3 marks*
   b. (i) What is the purpose of a software compiler in high-level languages   *3 marks*
        (ii) Briefly explain the role of an operating system in a computer system   *3 marks*
   c. Explain the purpose of communication protocols in data communication   *5 marks*
   d. Discuss the four principles for ensuring security and recovery in case of breaches of security   *8 marks*

Question 2:
   a. Assess the advantages and disadvantages of EPROM (Erasable PROM) as a memory technology   *5 marks*
   b. Compare the advantages and disadvantages of cloud storage solutions versus local storage solutions for personal use   *5 marks*
   c. Analyze the impact of cache size on CPU performance.   *5 marks*

Question 3:
   a. (i) What are the two widely used codes in data communication?   *2 marks*
        (ii) Discuss the advantages of parallel data transmission and serial data transmission   *4 marks*
   b. Discuss the importance of using compatible communication protocols in data communication.   *3 marks*
   c. Assess the impact of WAN technology on various sectors such as education, medicine, and transportation.   *6 marks*

Question 4:
   a. Compare and contrast floppy disks and Winchester disks.   **4 marks**
   b. Critically analyze the impact of emerging storage technologies, such as DNA storage or holographic storage, on future data storage systems.   *5 marks*
   c. Design a memory system hierarchy for a high-performance computing environment, considering factors such as speed, capacity, and cost.   **6 marks**

Question 5:
   a. Define the Flynn's classification for parallel computers.   *3 marks*
   b. Discuss the four categories of Flynn's classification for parallel computers.*12 marks*

Question 6:
   a. Describe distributed file system and state its key characteristics.   *7 marks*
   b. Assess the advantages and disadvantages of using a distributed file system in a networked environment.   **8 marks**