



**National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi – Abuja
Faculty of Sciences
Department of Computer Science**

2020_2 Examination

Course Code: CIT711

Course Title: Computer Fundamentals

Credit: 3 Units

Time Allowed: 3 Hours

Instruction: Answer Question One and Any Other Four Questions

1.
 - a. Explain what you understand by the following terms:
 - i. Memory access time **(2 marks)**
 - ii. Memory bandwidth **(2 marks)**
 - b. Without memory cache the computer will still execute instruction by fetching them from the main memory. Justify the essence of adding another memory layer called cache between the main memory and the CPU? **(4 marks)**
 - c. Explain what you understand by subroutine and state its purposes in software development **(4 marks)**
 - d. Explain what you understand by the following programming concepts and give an example of each or a real-life problem that can be implemented using the concept
 - i. Data type **(2 marks)**
 - ii. Array **(2 marks)**
 - e. John is working on a loop that will print the statement “I AM HAPPY” 100 times within a program. Write statement to achieve that using while loop **(2 marks)**
 - f. What is the relationship between operating systems and computer hardware? **(2 marks)**
 - g. Explain what you understand by data communication and discuss its importance **(2 marks)**
2.
 - a. Explain what you understand by the following terms:
 - i. Parallel processing **(2 marks)**
 - ii. Pipelining **(2 marks)**
 - b. Normally the C.P.U is much faster than input/output devices yet it must communicate with input output devices such as keyboard, printer etc. If the CPU must wait for input/output devices it will sit idle. Describe how this difference in speed is managed to avoid the CPU being idle. **(4 marks)**

- c. State four characteristics of RISC architecture (**4 marks**)
- 3.
- Describe the following category of Parallel processors
 - Distributed Architecture (**2 marks**)
 - Multiprocessors (**2 marks**)
 - By using the Flynn's classification, discuss the various Parallel architecture classification. (**4 marks**)
 - State and Justify the essence of Input/Output Module interfaces in computer (**4 marks**)
- 4.
- Explain what you understand by Real Time operating Systems and give two examples of real life activities where real time operating system is important (**4 marks**)
 - Discuss how pipelining can be used to improve the performance of a system and state the characteristic of the type of problems that can take the advantage of pipelining (**4 marks**)
 - Discuss two means by which computer memory speed can be increased. (**4 marks**)
- 5.
- Describe the function of the following components of Computer Networks
 - Servers (**1.5 marks**)
 - Clients (**1.5 marks**)
 - Transmission Media (**1.5 marks**).
 - Explain what you understand by network topology (**1.5 marks**)
 - describe and state the advantages and disadvantages of the following network topology
 - star topology (**3 marks**)
 - ring topology (**3 marks**)
- 6.
- Explain and state the advantages and disadvantages of the following programming language
 - Machine language (**3 marks**).
 - High Level language (**3 marks**).
 - While previous generation of programming languages are designed to build specific programs, fifth-generation languages often referred to as the generation of artificial intelligence was expected to be in the top 10 programming languages of 2020. According to you what is the way problems are expected to be solved by this 5th generation? (**2 marks**).

- c. Umar currently runs a car rental dealership and wishes to write a program that allows the user to enter the temperature of the location they plan to visit and then recommend a car based on the data. Below is a summary of the program structure Umar is looking for.

Temp greater or equal 80 a Convertible should be selected.
Temp greater than 60 and less than 80 a SUV should be selected
Temp less than 60 a truck should be selected.
Write down the statements for achieving that (**4 marks**)