



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF SCIENCES

DEPARTMENT OF COMPUTER SCIENCE

2022_2 EXAMINATION

COURSE CODE: CIT 309
COURSE TITLE: Computer Architecture I
CREDIT UNIT: 3
TIME ALLOWED: 2½HRS
INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER FOUR

Question 1

- (a) Evaluate any three (3) methods of accessing units of data in the memory of a computer system (*9 marks*)
- (b) As a user of the computer system, what are the performance parameters that are used by the computer memory? (*4 marks*)
- (c) i. Draw a diagram that represent the basic instruction cycle in a computer system (*7 marks*)
- ii. The PDP-11 processor includes an instruction, expressed physically as ADD C,D, that stores the sum of the contents of memory locations C into memory location D. Sequentially itemize a single instruction cycle of how this instruction is executed in the system's memory (*5 marks*)

Question 2

- (a) Give a concise description of the Arithmetic and Logic unit of a computer system (*6 marks*)
- (b) Define the following terms (*4½marks*)
- (i) Overflow rule
- (ii) Subtraction flow
- (iii) Floating point numbers
- (c) Itemize and briefly explain three elements of instruction (*4½ marks*)

Question 3

3(a)

(i) Outline the types of parallel processor system we have in computer science (2½ marks)

(ii) Briefly discuss any four (4) of your answers in (i) (6 marks)

(b) (i) State the registers involved in fetching instruction from the system's memory (2 marks)

(ii) Briefly explain any three (3) out of the four registers that causes an instruction to be fetched from the memory (4½ marks)

Question 4

(i) State three (3) features that can facilitate DMA transfers from I/O processors in a system (3 marks)

(ii) Briefly explain three (3) of the features you stated in (i) above (6 marks)

(iii) State the order of operations of the control unit in one clock pulse (6 marks)

Question 5

(a) Broadly speaking, there are three (3) principal approaches to multithreading – Discuss (9 marks)

(i) Define scheduling (1 mark)

(ii) Mention two types of scheduling we have in computer science (5 marks)

Question 6

(a) Briefly discuss the important issues in the design of instruction sets (9 marks)

(b) Identify four key characteristics of a symmetric multiprocessor (SMP) system (6 marks)