COURSE CODE: CIT309
COURSE TITLE: Computer Architecture
CREDIT: 3 Units
TIME ALLOWED: 3 Hours
INSTRUCTION: Answer Question One (1) and any other Three (3)

Question 1
Briefly describe each of the following
    i) SMP architecture. *(2 marks)*
    ii) Uniprocessor architecture *(2 marks)*
    iii) Processor performance measure. *(2 marks)*
    iv) Memory *(2marks)*
    v) Pipe-lining *(2 marks)*
    vi) Micro architecture *(2 marks)*
    vii) Cache memory *(2 marks)*
    viii) Von Neumann architecture *(2 marks)*
    ix) Flynn's taxonomy *(2 marks)*
    x) Time-shared bus *(2 marks)*
    xi) Logic gate *(2 marks)*
    xii) Micro-operation **(3 marks)**

Question 2
(a) Briefly explain the difference between Multicore and Multiprocessor *(6 marks)*
(b) (i) List four major types of parallel processor system discussed in this course *(2 marks)*
  (ii) Briefly explain items listed in (i) above *(6 marks)*

Question 3
  (a) Explain any four (4) important instruction set design issues in computer architecture. *(8 marks)*
  (b) Briefly explain the key components of a Mainframe Symmetric system. *(7 marks)*

Question 4
  (a) What are the principal advantages and disadvantage(s) of using micro-programing to implement a control unit? (*8 marks*)
  (b) List and explain any three (3) popular advantages of Symmetric Multiprocessor over Uniprocessor architecture. (*7 marks*)

Question 5
(a) Differentiate between the following terms: *($7^{1/2}$ marks)*
    i.) Control bus ii.) Address bus iii.) Data bus iv.) Karnaugh map v.) Boolean algebra
(b) List and explain any three performance parameters in computer memory. *($7^{1/2}$ marks)*

Question 6
(a) Briefly explain the following terminologies **($7^{1/2}$ marks)**
    i.) Processor instruction set (*$1^{1/2}$ marks*)
    ii.) Opcodes (*$1^{1/2}$ marks*)
    iii.) Arithmetic and Logic Unit (ALU) (*$1^{1/2}$ marks*)
    iv.) Two's complement notation (*$1^{1/2}$ marks*)
    v.) Memory buffer register (MBR) (*$1^{1/2}$ marks*)
(b) The operation of the processor is determined by the instructions it executes. Enumerate four main elements of a machine instruction *($7^{1/2}$ marks)*