



*(Knowledge for Development)*

**KIBABII UNIVERSITY**

**(KIBU)**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAM  
YEAR THREE SEMESTER TWO**

**FOR THE DEGREE IN  
(COMPUTER SCIENCE)**

**COURSE CODE : CSC 315  
COURSE TITLE : COMPUTER  
ARCHTECTURE**

**DATE: 14/11/22**

**TIME: 11.00 A.M – 01.00 P.M**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

**QUESTION ONE (COMPULSORY) [30 MARKS]**

- a) Differentiate between the following terms
- i) Computer architecture and Computer organization (2 Marks)
  - ii) CPU and GPU (2 Marks)
  - iii) Source Program and Object code (2 Marks)
- b) State three factors that influences the performance of the CPU (3 Marks)
- c) Describe any three Features of machine languages (3 marks)
- d) State two ways in which signed integers are represented (4 Marks)
- e) A given computer system includes a hard disk with direct memory access (DMA). Suppose a user application needs to change a single byte within a disk block. Sketch, in order, all communications that must take place between the processor and the hard drive to complete this operation. (4 Marks)
- f) Complete the truth table for the following logic gates (4 Marks)

**OR gate**

Input A	Input B	Output
0	0	
0	1	
1	0	
1	1	

**AND gate**

Input A	Input B	Output
0	0	
0	1	
1	0	
1	1	

- g) Using a discuss the three main categories of computer networks based on geographical coverage (6 marks)



### QUESTION TWO [20 MARKS]

- a) List and explain 3 factors that are put into consideration when designing computer architectures (6 Marks)
- b) Explain the meaning of the following operations associated with a computer's Control Unit (6 Marks)
  - i) Fetch
  - ii) Decode
  - iii) Execute
- c) Briefly explain the role of a System Clock and its speed matters in instruction processing. (2 Marks)
- d) Outline 3 types of registers found in the CPU and the role of each type (6 Marks)

### QUESTION THREE [20 MARKS]

- a) State and explain any four memory addressing modes (12 marks)
- b) Briefly describe the roles of the data bus and the address bus within the central processing unit (4 Marks)
- c) Define the term interrupt and further explain any three types of interrupts and how they are handled (4 Marks)

### QUESTION FOUR [20 MARKS]

- a) Difference between Primary and Secondary memory (2 Marks)
- b) Explain 4 factors to consider when buying a secondary storage device (4 Marks)
- c) Explain 4 types of number systems used for data representation in computers (8 Marks)
- d) Using a well labelled diagram, Discuss the functional units of a computer (6 Marks)

**QUESTION FIVE [20 MARKS]**

- a) Define the meaning of the types of memory
  - i) ROM (2 Marks)
  - ii) PROM (2 Marks)
  - iii) EPROM (2 Marks)
- b) Explain two advantages of using binary number system in computers instead of natural language (4 Marks)
- c) Distinguish between second and third generation languages (4 Marks)
- d) Describe the function of flag register (6 Marks)