(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)
UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
SECOND YEAR FIRST SEMESTER

FOR THE DEGREE OF BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)

COURSE CODE: BIT 213

COURSE TITLE: PLATFORM TECHNOLOGIES II

DATE: 19/12/2023 **TIME:** 9.00 A.M. – 11.00 A.M.

INSTRUCTIONS

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

a) What is the difference between hardware and software? **[2 Marks]**

b) What is DMA and how does it improve the performance of I/O operations? **[4 Marks]**

c) Explain the different components of a computer system and their functions. **[6 Marks]**

d) Explain the fetch/execute cycle and how it is used to execute machine code instructions. **[8 Marks]**

e) Discuss the different types of computer architectures and their advantages and disadvantages. **[10 Marks]**

QUESTION TWO [20 MARKS]

a) What is the difference between a register and a memory cell? **[2 marks]**

b) Explain the different types of interrupts and their handling mechanisms. **[6 Marks]**

c) What are the four main components of the von Neumann machine? **[4 marks]**

d) Discuss the different levels of the memory hierarchy and explain how they are used to improve the performance of a computer system. **[8 marks]**

QUESTION THREE [20 MARKS]

a) What are the different components of a video controller? **[3 marks]**

b) Explain the role of an I/O controller? **[3 marks]**

c) Discuss the three main generations of computer architecture? **[6 Marks]**

d) Discuss the challenges of designing and implementing high-performance and reliable processor to network interfaces. **[8 Marks]**

QUESTION FOUR [20 MARKS]

a) What is a device subsystem? Give two examples of device subsystems. **[4 Marks]**

b) Explain how interrupts are used to improve the performance and responsiveness of computer systems. **[4 Marks]**

c) Discuss the different types of instructions and addressing modes used in computer architectures. Provide examples of each type of instruction and addressing mode. **[12 marks]**

QUESTION FIVE [20 MARKS]

a) What is the purpose of handshaking in I/O communication? **[2 marks]**

b) Explain the different challenges of designing and implementing multicore and many core processors. **[6 Marks]**

c) Discuss the different RAID architectures and explain how they are used to improve the performance and reliability of storage systems. **[12 Marks]**