



MACHAKOS UNIVERSITY

University Examinations 2021/2022

EXAMINATION FOR BSC IN ...

SIT 110: COMPUTER ORGANIZATION AND ARCHITECTURE

DATE: DECEMBER 2021

TIME: 2 HOURS

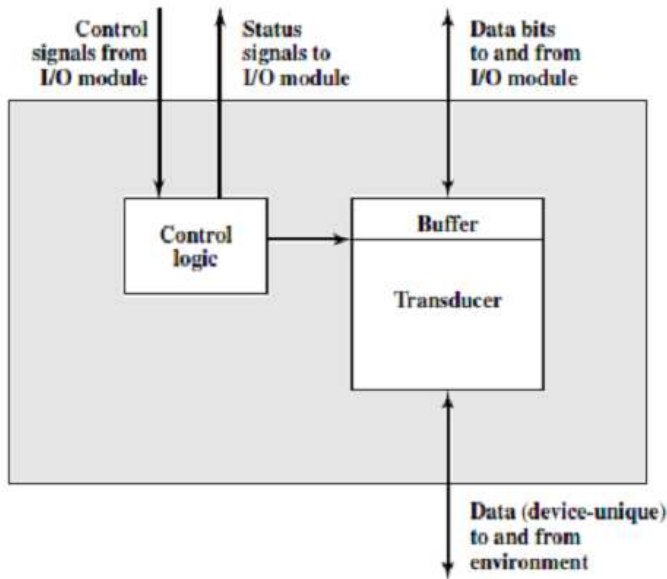
Instructions: Answer Question ONE and other TWO Questions

Question 1 (30 Marks) [Compulsory]

- a) Differentiate between computer organization and computer architecture (4 marks)
- b) Explain how a CPU can know an interrupt has occurred (4 marks)
- c) Discuss any three reasons why one cannot directly connect peripherals to a system bus (6 marks)
- d) Explain any five computer architecture attributes (5 marks)
- e) Find the 2s Complement of the following Fixed Point Numbers
 - i. 10100010 (3 marks)
 - ii. 00110000 (3 marks)
- f) Using a well labeled diagram, explain the concept of von Neumann architecture (5 marks)

Question 2 (20 Marks)

- a) Explain types of instruction set operations (4 marks)
- b) Describe the four classes of interrupts (8 marks)
- c) Discuss the diagram below showing a block diagram of an external device (8 marks)



Question 3 (20 Marks)

- Differentiate between programmed i/o and interrupt driven I/O techniques (4 marks)
- Discuss four characteristics of disk systems (8 marks)
- List four disadvantages of using RAID level 5 technology (8 marks)

Question 4 (20 Marks)

- Discuss the four functions of the input/output module (8 marks)
- Describe the following elements of bus design
 - Bus grant (2 marks)
 - Bus request (2 marks)
 - Transfer ACK (2 marks)
- Year by year, the cost of computer systems continues to drop dramatically, while the performance and capacity of those systems continue to rise equally dramatically. Describe four factors that designers consider in ensuring there is risen performance in computer systems (6 marks)

Question 5 (20 Marks)

- a) Describe the following types of bus Architectures
 - i. Small computer system interface (3 marks)
 - ii. Extended industry standard architecture (3 marks)
 - iii. Micro channel architecture (3 marks)
- b) Using a well labeled diagram, explain memory hierarchy of computer systems (8 marks)
- c) Differentiate between parallel and serial interfaces (3 marks)