



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 104: COMPUTER ORGANIZATION

DATE: 21/1/2021

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question ONE and any other TWO Questions

QUESTION ONE (COMPULSORY)

- a) Describe RAID technology (5 marks)
- b) Convert 5A34F16 to: (8 marks)
 - i. Binary
 - ii. Decimal
 - iii. Hexadecimal
 - iv. BCD
- c) Discuss multiple and single implementation of a bus system (6 marks)
- d) Discuss basic working principle of computer (6 marks)
- e) Draw the block diagram of Arithmetic Logic Unit (ALU) to perform the following operations: (use MUX) (Assume the length of the data). AND, OR, NOR, NAND (5 marks)

QUESTION TWO

- a) Describe the following DMA based data transfer. (5 marks)
- b) Perform the binary arithmetic $1010100 - 1000011$ using 2's compliments (3 marks)
- c) Draw a block diagram of binary multiplier (5 marks)
- d) Explain memory hierarchy (7 marks)

QUESTION THREE

- a) Explain any three logic gates used in the implementation of logical operations (6 marks)
- b) Explain the locality principles of a cache (4 marks)
- c) By use of diagrams, describe the structure of an IAS structure: (8 marks)

QUESTION FOUR

- a) Differentiate between virtual and cache memory (4 marks)
- b) Discuss the functions of I/O Module (10 marks)
- c) Explain three methods of memory access (6 marks)

QUESTION FIVE

- a) Explain the different types of mapping procedures in the organization of cache memory with the use of example. (9 marks)
- b) Discuss any three different ways in which ROM can be programmed. (6 marks)
- c) Describe the following instruction cycles (5 marks)
 - i. Fetch
 - ii. interrupt