MACHAKOS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY
BACHELOR SCIENCE COMPUTER SCIENCE
FOURTH YEAR SECOND SEMESTER

SCO104: COMPUTER ORGANIZATION
DATE: **TIME:**

Instruction: 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