Machakos University College

(A Constituent College of Kenyatta University)
UNIVERSITY EXAMINATIONS 2013/2014

SCHOOL OF COMPUTING AND APPLIED SCIENCE

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO201: COMPUTER ORGANISATION AND ARCHITECTURE II

DATE: 9/4/2014 **TIME:** 8.30 a.m. – 10.30 a.m.

Answer question ONE and any other TWO questions in this paper

1. a) Explain the following types of instructions.
   i) Logic instruction
   ii) Data transfer instruction
   iii) Bit-oriented instruction. (6mks)
   b) Discuss the following types of operations.
   i) Arithmetic
   ii) System control
   iii) Conversion. (6mks)
   c) Explain the following micro-operations.
   i) Fetch cycle
   ii) Indirect cycle. (4mks)

d) Differentiate between a linear and non-linear pipeline.(4mks)

e) Explain the registers found in the register window. (4mks)

f) Discuss the following terms as used in RISCS. (6mks)

i) Procedure calls

ii) Operation

2. a) Using an example describe the following logical operations.

i) Logical shift

ii) Rotate shift (6mks)

b) Differentiate between a hardwired implementation and a micro programmed implementation of a control unit? (4mks)

c) i) Briefly explain the two basic approaches used to minimize register-memory operations on RISC machines. (6mks)

ii) What are some typical characteristics of a RISC instruction set architecture? (4mks)

3. a) Using a diagram describe the fetch, indirect, execute and instruction cycle as used in micro-operations.(10mks)

b) i) Explain the register organization of a computer system. (5mks)

ii) Explain the two categories of pipeline processing. (5mks)

4. a) Describe the processor organization of a computer system.(6mks)

b) i) Describe the concept of instruction pipelining. (4mks)

ii) Using a diagram explain the 5 basic stages of pipeling in RISC machine. (10mks)

5. a) Using a diagram discuss the instruction cycle states.(14mks)

b) Discuss three interrupts in the instruction cycle. (6mks)