



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN

ELECTRICAL AND ELECTRONICS ENGINEERING

SUPPLEMENTARY/SPECIAL EXAMINATION

EED 208: COMPUTER PRINCIPLES

DATE: 30/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

This paper consists of FIVE questions

Answer question one and other two questions in this paper

QUESTION ONE (COMPULSORY)

- a) Define
- i cache memory (2 marks)
 - ii instruction pipelining (2 marks)
 - iii word (1 mark)
 - iv digital computer (1 mark)
- b) State
- i Any two types of RAM (2 marks)
 - ii Three requirement for instruction encoding (3 marks)
- c) Explain
- i The two main parts of an instruction (2 marks)
 - ii The instruction format of a stack computer (2 marks)
 - iii The meaning of the instruction: add r0, r1, r2 (2 marks)
 - iv The meaning of the instruction: $PC = (PC + 8) + (offset * 4)$ (1 mark)
- d) Differentiate between vertical microprogramming and horizontal microprogramming (2 marks)
- e) Explain the basic principles of magnetic tape storage (5 marks)

- f) State five things to specify in instruction set architecture (5 marks)

QUESTION TWO

- a) Define a microprogram (1 mark)
- b) Using diagram, Explain the following instruction cycles (9 marks)
- i Fetch
 - ii Execute
 - iii interrupt
- c) Discuss magnetic drum memory (2 marks)
- d) Differentiate between (4 marks)
- i Computer organization and architecture
 - ii Function and structure of a computer
- e) State two advantages of each of the following types of computer storage (4 marks)
- i Punched card
 - ii Magnetic core

QUESTION THREE

- a) Explain the functions of the following types of registers (8 marks)
- i. PC
 - ii. MAR
 - iii. IR
 - iv. I/O
- b) Outline any two traditional addressing modes (2 marks)
- c) Explain how to read from and write to a magnetic tape (5 marks)
- d) Write the CPU loop for instruction sequencing (5 marks)

QUESTION FOUR

- a) State any three types of ROM (3 marks)
- b) Discuss the following ways of instruction representation (9 marks)
- i Single address
 - ii Two address
 - iii Three address
- c) Explain the following methods of accessing the memory (8 marks)
- i. Sequential Access

- ii. Direct Access
- iii. Random Access
- iv. Associative

QUESTION FIVE

- a) Using diagram, explain the function of a CPU (8 marks)
- b) Explain four types of instructions (8 marks)
- c) Explain any two ways in which I/O devices communicates with CPU (4 marks)