



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

DIPLOMA IN ELECTRICAL ENGINEERING

EED208: COMPUTER PRINCIPLES

DATE:

TIME:

INSTRUCTIONS

Answer question ONE and any other TWO questions

Do not write on this question paper

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define the following terms in respect to Computers.
 - i) Syntax
 - ii) Machine language
 - iii) Object Code
 - iv) Compiler. (8 marks)
- b) Suppose a microprocessor is instructed to ADD 2 and 4.
 - i. Illustrate how the above would be stored in the main memory. (4 marks)
 - ii. Describe the sequence of steps that will take place for the above operation. (4 marks)
- c) Illustrate and briefly describe the fetch execute cycle. (6 marks)
- d) With the aid of a diagram, list the major components of a computer system and explain the functions of each component listed. (8 marks)

QUESTION TWO (20 MARKS)

- a) The following registers are essential to instruction execution, explain the purpose of each:
 - i. Program Counter (PC) ;
 - ii. Instruction Register (IR) (4 marks)
- b) With the aid of a diagram, describe the memory hierarchy in a computer system. (8 marks)
- c) Differentiate between SRAM and DRAM as used in computers. (4 marks)
- d) Describe **two** variations of compact disks. (4 marks)

QUESTION THREE (20 MARKS)

- a) With the aid of a diagram, describe the following addressing modes:
 - i. Immediate;
 - ii. Indirect;
 - iii. Direct. (6 marks)
- b) Describe **three** reasons why I/O devices are not directly connected to the system bus. (6 marks)
- c) Draw a well labeled diagram of the internal structure of the computer hard disk. (8 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the following pair of terms as used in computers:
 - i. PCI and AGP
 - ii. Data bus and Address bus. (8 marks)
- b) Explain the sequence of operations that take place in an interrupt driven I/O transfer. (8 Marks)
- c) Describe the concept of DMA as used in I/O operations. (4 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the following types of instructions:
 - i) Data Processing;
 - ii) Memory/Register referenced;
 - iii) Input/output;
 - iv) Control. (8 marks)
- b) Explain the concept of *paging* as used in virtual memory management. (4 marks)
- c) Draw a diagram of two bus structure of processor organization. (4 marks)
- d) Outlines **four** elements of an instruction. (4 marks)