KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY
KBI 2201- COMPUTER ARCHITECTURE AND OPERATING SYSTEMS

Date: 07TH DECEMBER 2022
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)
a) Briefly explain the differences between the following computer hardware: (6 Marks)
  i)   PATA and SATA.
  ii) Magnetic disk and Optical disk drives
  iii) Volatile memory and Non-volatile memory
b) Describe three main objectives of an operating system in computers. (6 Marks)
c) State and explain at least four common types of computer architectures. (6 Marks)
d) Discuss different steps involved in an instruction execution cycle in the CPU? (6 Marks)
e) Draw and explain the hierarchy of languages in the architecture of programmer's view of a computer system. (6 Marks)

QUESTION TWO (20 MARKS)
a) Explain four characteristics of memory hierarchy design (4 Marks)
b) Use a well labeled diagram to identify different components of a typical block of the CPU and explain how each component works (8 Marks)
c) List four services provided by an operating system in a computer system, and explain how each creates convenience for users. (8 Marks)

QUESTION THREE (20 MARKS)
a) Highlight eight components that an operating system can manage in any computer system.
  (4 Marks)
b) Describe how the Von Neumann computer model designed and how it works. Use a well labeled diagram to demonstrate. (8 Marks)
c) Discuss what happens to a processor when an interruption of a signal is generated in any computer system. (8 Marks)

QUESTION FOUR (20 MARKS)
a) Explain clearly on how data is stored in digital computer systems. (4 Marks)
b) Use a well labeled diagram to describe the structure view of an operating system services.
  (8 Marks)
c) The operating system is responsible for different activities in connection to storage management. Discuss. (8 Marks)

QUESTION FIVE (20 MARKS)

a)   An interface subsystem of a computer system provides registers that the CPU can read from or write to. Identify three types of these registers and explain their roles respectively.   (6 Marks)

b)   Explain the three main functions played by the central processing unit of a computer system.
                                                                                                                (6 Marks)

c)   The operating system performs the task of scheduling processes based on priorities using different algorithms in a computer. Discuss at least four types of process scheduling algorithms. (8 Marks)