**QUESTION ONE (COMPULSORY)**

a) Define the following terms (10 Marks)

* 1. Software
  2. Operating system
  3. Program
  4. I/O
  5. FIFO

b) Discuss five functions of the operating system (10 Marks)

c)Analyze the evolvement of windows operating system to date (10 Marks)

**QUESTION TWO**

1. Explain three possible causes for a process to terminate **[6 marks]**
2. Differentiate between pre-emptive and non – preemptive scheduling **[4 marks]**
3. Differentiate between command based operating systems and graphical based (GUI) operating systems **[4 marks]**
4. With aid of a diagram explain the 3 state model in process managemen **[6 marks]**

**QUESTION THREE**

a) Explain four principle objectives of input/ output systems (8 marks)

b) Explain the following data transfer modes (6 marks)

* 1. Programmed
  2. Interrupt driven
  3. Direct memory access

c) Explain six features of a good password system in a multi user environment (6 Marks)

**QUESTION FOUR**

1. Define inter process communication (2Marks)
2. Explain the following page replacement policies.
   1. First in first out (2Marks)
   2. Last in First out (2Marks)
   3. Least frequently used (2Marks)
3. Explain the following types of user interfaces (6Marks)
   1. Command driven
   2. Menu driven
   3. Graphical user interface
4. Explain THREE examples of operating system in market today (6 Marks)

**QUESTION FIVE**

1. Explain the essential properties of the following types of operating systems:(12Marks)
   1. Batch
   2. Time sharing
   3. Distributed
   4. Real time
2. the following scheduling techniques
   1. First come first served (2marks)
   2. Shortest job next (2mks)
   3. Round robin (2mks)
3. Differentiate between application software and system software (2 Marks)