

**KABARAK UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**FIRST SEMESTER, 2017/2018 ACADEMIC YEAR**

**EXAMINATION FOR THE DEGREE OF BSC CS/IT/BBIT/BMIT/BMIS**

**COMP 224/INTE 216- COMPUTER ORGANIZATION AND ARCHITECHTURE**

**STREAM: [Y2S2/Y2S1] TIME:**

**EXAMINATION SESSION: AUGUST DATE:** 2018

**INSTRUCTIONS**

* **Answer QUESTION ONE (COMPULSORY) and any other TWO questions**
* **Do not write on the question paper**
* **Show your working clearly**

**QUESTION ONE 30 MARKS**

1. Define the following terms.
2. Computer organization (2 marks)
3. Computer Architecture (2 marks)
4. Signals (2 marks)
5. Bus (2 marks)
6. Register (2 marks)
7. Write a note on the Moore’s law. (5 marks)
8. Discuss about hard disk fragmentation. (5 marks)
9. List down the SIX basic Input/Output steps. (6 marks)
10. List down the FOUR categories of Flynn’s classification of parallel processing computers (4 marks)

**QUESTION TWO 20 MARKS**

1. A Random Access Memory (RAM) is a digital logic device that is used to store programs and data temporarily. With the help of a well labelled diagram, discuss the PIN diagram of a RAM. (6 marks)
2. Explain the usage of the CLOCK and RESET pins in a CPU. (4 marks)
3. I/O chips are used to allow the CPU to interface with peripherals (keyboards, printers, etc). Using a well labelled diagram, discuss the internal structure of a simple parallel I/O chip. (6 marks)
4. Discuss about address decoders. (4 marks)

**QUESTION THREE 20 MARKS**

1. Discuss about the IAS (Von Neumann/Turing) machine using a well labelled diagram. (8 marks)
2. The IAS operates by repetitively performing an instruction cycle. Write a note on the IAS machine sub-cycles. (6 marks)
3. The cache memory works with the principle of locality. Discuss in details about the principle of locality. (6 marks)

**QUESTION FOUR 20 MARKS**

1. A DRAM is made with cells that store data as charge on capacitors. With the help of a detailed diagram, discuss the DRAM sell structure. (6 marks)
2. State and Explain the THREE types of Read Only Memory (ROM) (6 marks)
3. Discuss about the magnetic tape. (4 marks)
4. The file system defines how and where files are stored within a hard disk (or partition). List down at least FOUR file systems that are used. (4 marks)

**QUESTION FIVE 20 MARKS**

* 1. An Input/Output module acts as an interface between the CPU and Memory. Using a diagram, describe the module. (5 marks)
  2. Giving examples, Write note on the THREE classifications of external devices. (6 marks)
  3. Pipelining is a technique used in advanced microprocessors where the microprocessor begins executing a second instruction before the first has been completed. With the help of diagrams, Explain how pipelining works. (6 marks)

* 1. List down THREE types of pipelining hazards. (3 marks)