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*(Knowledge for Development)*  
**KIBABII UNIVERSITY**  
**(KIBU)**

**UNIVERSITY EXAMINATIONS**  
**2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS**  
**YEAR TWO SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE OF**  
**(INFORMATION TECHNOLOGY)**

**COURSE CODE** : **BIT 213**  
**COURSE TITLE** : **PLATFORM TECHNOLOGIES II**

**DATE: 04/02/2021** **TIME: 2.00 P.M. – 4.00 P.M.**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

### QUESTION ONE (COMPULSORY) [30 MARKS]

- a) Define the following terms:
- i) Computer architecture (1 mark)
  - ii) Instruction set (1 mark)
  - iii) Interrupt (1 mark)
  - iv) Bus (1 mark)
- b) Discuss how the following factors affect the performance of CPU
- i) Clock speed (2 marks)
  - ii) Cache memory capacity (2 marks)
  - iii) I/O devices (2 marks)
  - iv) Bus width (2 marks)
- c) Distinguish the following terms
- i) CISC and RISC architectures (2 marks)
  - ii) Transistors and integrated circuits (2 marks)
  - iii) Synchronous and asynchronous timing (2 marks)
  - iv) Spatial and temporal locality of reference (2 marks)
- d) Explain the major features of Von Neumann architecture. (4 marks)
- e) What is the general relationship among access time, memory cost and capacity of cache memory? (6 marks)

### QUESTION TWO [20 MARKS]

- a) List the three broad classifications of external devices. (3 marks)
- b) Name the five major functions of an I/O module. (5 marks)
- c) When a device interrupt occurs, how does the processor know which device issued the interrupt? (6 marks)
- b) Explain the following input output techniques.
- i) Programmed I/O (2 marks)
  - ii) Interrupt – driven I/O (2 marks)
  - iii) Direct Memory Access (2 marks)

### QUESTION THREE [20 MARKS]

- a) Describe the three properties common among all semiconductor memory cells. (3 marks)
- b) Identify and describe the four access methods used in cache memory. (8 marks)
- c) Discuss how the memory hierarchy operates. [5 Marks]
- d) Briefly describe the write back and write-through policies of the cache memory. [4 Marks]

### QUESTION FOUR [20 MARKS]

- a) How does the principle of locality relate to the use of multiple memory levels? (2 marks)
- b) Describe four strategies (two each) for exploiting spatial locality and temporal locality (4 marks)
- c) What is the key property of random access memory? [2 Marks]
- d) Describe the similarity between read-only memory and read mostly memory [2 marks]
- e) Explain why dynamic random access leaks charges while static random access memory does not [2 Marks]
- f) Describe the characteristic similarity (in terms of property) and three differences (in terms of speed, size and cost) between dynamic random access memory and static random access memory [5 Marks]
- g) Name three techniques used in mapping main memory blocks into cache lines [3 Marks]

### QUESTION FIVE [20 MARKS]

- a) What are the advantages of using a glass substrate for a magnetic disk? (5 marks)
- b) Briefly discuss how data is read and written onto a magnetic disk. (4 marks)
- c) Describe three differences between a CD and a DVD that account for the larger capacity of the latter. (3 marks)
- d) What common characteristics are shared by all RAID levels? (3 Marks)
- e) List and briefly explain five important instruction set design issues. (5 marks)