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UNIVERSITY REGULAR EXAMINATIONS

2013/2014 ACADEMIC YEAR

1ST YEAR 1ST SEMESTER EXAMINATION

FOR THE DEGREE OF

POSTGRADUATE DIPLOMA IN ICT

COURSE CODE: ICT 715

COURSE TITLE: COMPUTER ORGANIZATION

DATE: 25TH APRIL, 2014

TIME: 9:00A.M.-12 NOON

INSTRUCTIONS TO CANDIDATES

- Answer questions one and any two questions only
- Question one carries 30 marks and the other questions carry 20 marks each.

QUESTION ONE

- (a) Define the terms: (4 marks)
- (i) Computer Organization
 - (ii) Micro-operation
- (b) List any six capabilities of the general register (6 marks)
- (c) Explain the importance of instruction set completeness (4 marks)
- (d) During normal operation, the microprocessor sequentially fetches and executes instructions. Each instruction is executed as a sequence of three phases. With the aid of a diagram, explain these phases in the operation. (10 marks)
- (e) In order to transmit data along the data bus in an orderly manner, transfers must be scheduled. Three scheduling techniques have been devised for communicating with input/output devices. State and briefly explain these scheduling techniques. (6 marks)

QUESTION TWO

- (a) Explain the DMA mechanism of operation. (4 marks)
- (b) Explain the following terms with regard to the operation of the storage media e.g. hard-disk. (8 marks)
- 1. Seek time
 - 2. Latency
 - 3. Transfer rate
 - 4. Disk address
- (c) What are the major interrupts that cause a break in the normal execution of a program. (6 marks)
- (d) Explain why computers use addressing mode techniques. (2 marks)

QUESTION THREE

- (a) Develop a flowchart of a Polling Loop for a three device system. (6 marks)
- (b) Define the term counter (2 marks)
- (c) Explain the input/output processor (4 marks)
- (d) Using a diagram, explain the memory hierarchy in computer systems. (3 marks)
- (e) Compare RAM and ROM chips (5 marks)

QUESTION FOUR

- (a) By use of a diagram explain the basic computer registers connected to a common bus system. (6 marks)

- (b) Briefly explain the following languages. (4 marks)
- (i) Machine language
 - (ii) Assembly language
- (c) With the aid of a diagram, illustrate the basic elements of a computer. Clearly show both signal and data flows through the elements. (10 marks)

QUESTION FIVE

- (a) Explain the concept of micro-programmed control organization. (4 marks)
- (b) Briefly explain the following concepts: (10 marks)
- (i) Subroutine
 - (ii) Memory address map
 - (iii) Associative memory
 - (iv) Cache memory
 - (v) Virtual memory
- (c) Explain the process of Address mapping using pages. (6 marks)