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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2010/2011**

**COURSE NAME : COMPUTER ARCHITECTURE
FUNDAMENTAL**

COURSE CODE : DAT 10403

PROGRAMME : 1 DIT

EXAMINATION DATE : APRIL/MAY 2011

DURATION : 2 ½ HOURS

INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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- Q1**
- (a) Discuss the functional building block of CPU. (5 marks)
 - (b) Differentiate between main memory and register. (5 marks)
 - (c) Explain the instruction fetch-execute cycle process of CPU. Use example of adding operation of two numbers in your explanation. (6 marks)
 - (d) Show the process diagram of the (c) question above. (4 marks)
- Q2**
- (a) Using multiplication method converts the following numbers to decimal;
 - (i) $1100\ 0101\ 0010\ 0001_2$
 - (ii) $C521_{16}$
 - (iii) $3ADF_{16}$
 - (iv) 2456_7
 - (v) 4576_8
 (5 marks)
 - (b) Convert the following binary numbers to hexadecimal;
 - (i) $0101\ 1011\ 1010\ 1010$
 - (ii) $0111\ 1111\ 1111\ 0001$
 - (iii) $0001\ 1110\ 1111$
 - (iv) $0110\ 0011\ 0001\ 0001$
 - (v) $1111\ 1111\ 0000\ 0000$
 (5 marks)
 - (c) Using division method, convert the following decimal numbers to binary;
 - (i) 4 908
 - (ii) 71 269
 - (iii) 370 000
 - (iv) 89 321
 - (v) 999 777
 (5 marks)

(d) What is the value of the following binary numbers?

- (i) 110 0101.1
- (ii) 111 0010.11
- (iii) 1110 0101.1
- (iv) 100 0001.11
- (v) 111 1111.1

(5 marks)

Q3 (a) Define Von Neumann architecture.

(2 marks)

(b) Explain why does Von Neumann architecture better than the previous computer design concept. Use the following schematic diagram in **figure Q3** for your arguments.

(3 marks)

(c) List **THREE** advantages of the volatile memory as compared to non-volatile memory.

(6 marks)

(d) Explain how computer organization supports computer system.

(4 marks)

(e) Differentiate the first generation computer and the third.

(3 marks)

(f) Explain the main objective of computer invention during the early generation.

(2 marks)

- Q4**
- (a) Discuss **THREE** advantages of a serial bus. (6 marks)
 - (b) Discuss the transmission efficiency between interrupt and the DMA. (4 marks)
 - (c) Draw a hierarchical diagram for **THREE** common storage devices. (3 marks)
 - (d) State the functions of the storage devices in Q4(c) above. (3 marks)
 - (e) Discuss **TWO** strengths and weaknesses of ISA system buses. (4 marks)
- Q5**
- (a) Define instruction set. (2 marks)
 - (b) Differentiate RISC and CISC processor. (2 marks)
 - (c) List **THREE** major components of CPU. (3 marks)
 - (d) State the functions of the CPU components in Q5(c) above. (3 marks)
 - (e) Each instruction must contain information required by the CPU for execution, state and explain **TWO** element of the instruction set. (4 marks)
 - (f) Draw an addressing mode diagram for each of the following addressing and briefly explain each of them. (6 marks)
 - (i) Immediate addressing
 - (ii) Direct addressing
 - (iii) Indirect Addressing

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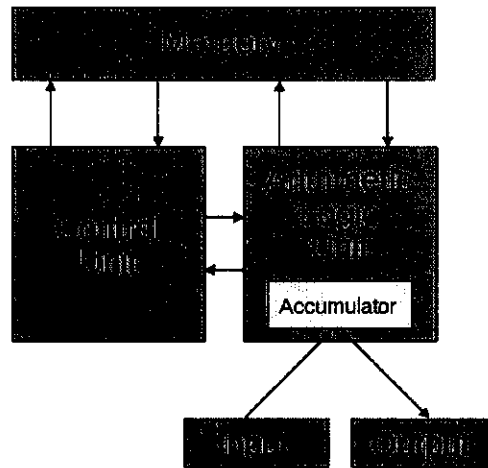


FIGURE Q3