



UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION
JANUARY 2016 SEMESTER

COURSE CODE : ICB 10203

COURSE NAME : COMPUTER ORGANIZATION

PROGRAMME NAME : BACHELOR OF INFORMATION TECHNOLOGY (Hons)
IN COMPUTER SYSTEM SECURITY
BACHELOR OF INFORMATION TECHNOLOGY (Hons)
IN SOFTWARE ENGINEERING
BACHELOR OF COMPUTER ENGINEERING (Hons)

DATE : 26 MAY 2016

TIME : 9.00 am – 11.30 am

DURATION : 2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

1. Please **CAREFULLY** read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **ONE (1)** sections; Section A.
4. Answer **ONLY FOUR (4)** of the **FIVE (5)** questions.
5. Please write your answers on the answer booklet provided.
6. Answer all questions in English language **ONLY**.
7. Rules of Boolean Algebra table has been appended for your reference.

THERE ARE 6 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 100 marks)**INSTRUCTION: Answer only FOUR questions ONLY.****Please use the answer booklet provided.****Question 1**

- (a) List **THREE (3)** main differences between desktop computers and servers. (6 marks)
- (b) Describe **FOUR (4)** types of embedded computers architecture and the uses in the technology. (8 marks)
- (c) Elaborate the process of Parallel technology. (5 marks)
- (d) Describe **THREE (3)** main key points of computer evolution. (6 marks)

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Question 2

(a) Define the Base/Radix number and convert 189_{10} into

- i. Binary
- ii. Hexadecimal
- iii. Octal

(7 marks)

(b) Do the arithmetic operations using binary 2's complement representation for the following:

- i. $124 - 117$
- ii. $193 - 110$

(6 marks)

(c) Data representation represents the different types of data. Name **THREE (3)** types of data together with the standards use for these types of data.

(6 marks)

(d) Figure 1 below shows the architecture between web browser and web server. Explain **THREE (3)** different communicating processes between web browser and web server.

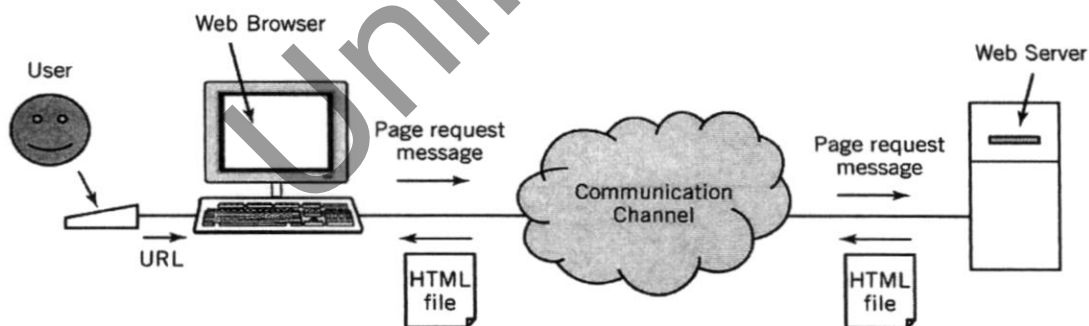


Figure 1: Web browser and Web Server Architecture

(6 marks)

Question 3

- (a) Define the meaning of I/O Module and identify **FOUR (4)** benefits of I/O Module. (10 marks)
- (b) Data moves between the various I/O modules, memory, and the CPU in similar fashion by using bus. Define bus in the computer organization concept and describe **THREE (3)** types of bus structure. (8 marks)
- (c) Explain the storage functions and list **FOUR (4)** types of storage devices. (6 marks)
- (d) Define the Storage Area Network (SAN). (1 mark)

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Question 4

(a) Draw the logic circuit represented by each expressions below:

i. $F = (A + C') \cdot B$

ii. $F = ((A + B) \cdot D) + ((C \cdot D) + A)$

(8 marks)

(b) Derive the logic expression and draw the logic circuit of expression below;

i. $F = AB' + ABC'$

ii. $F = X'(X+Y) + Z' + ZY$

(6 marks)

(c) Give **FOUR (4)** methods to improve memory accesses.

(4 marks)

(d) How many main stages in disk access process? Explain the stages of disk access process.

(7 marks)

Question 5

(a) Define Assembly Language. Explain **TWO (2)** differences between assembly language and machine language.

(5 marks)

(b) Discuss and give examples of the following:

- i. Assembler
- ii. Linker and Link Libraries
- iii. Assemble and Link Process
- iv. Debugger
- v. Editor

(10 marks)

(c) Pipelining is the instruction process to solve the bottleneck of fetching instructions from memory.

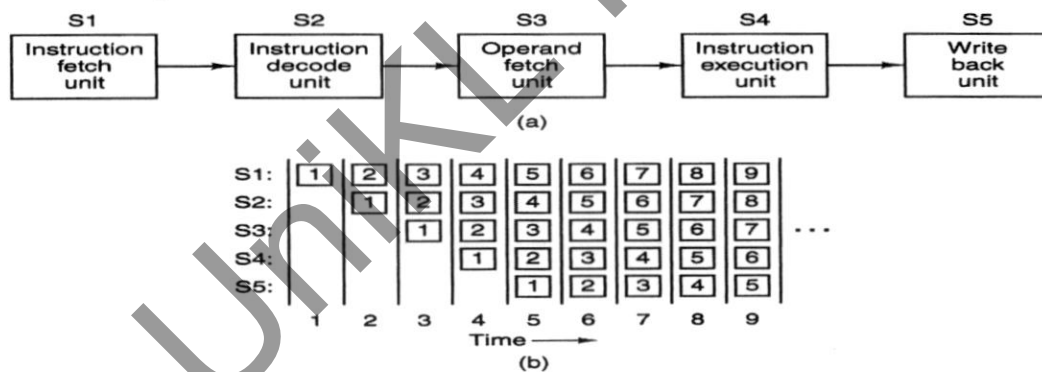


Figure 2: 5 Unit Pipeline

Based on the Figure 2 above, the state of each stage is referring as a function of time. Elaborate the Nine clock cycles that illustrated in every five stage of pipelining.

(10 marks)

END OF EXAMINATION PAPER

APPENDICES

Rules of Boolean Algebra

Rule Number	Boolean Expression
1	$A + 0 = A$
2	$A + 1 = 1$
3	$A \cdot 0 = 0$
4	$A \cdot 1 = A$
5	$A + A = A$
6	$A + A' = 1$
7	$A \cdot A = A$
8	$A \cdot A' = 0$
9	$A'' = A$
10	$A + AB = A$
11	$A + A'B = A + B$
12	$(A + B)(A + C) = A + BC$