Introduction to Computer Science: Mid-Term Exam

November 14, 2014. 9:30 - 11:00

Name: _____

Student ID: _____

Instructions: This paper consists of fifty multiple choice questions. Each carries 2 marks. You have to answer all of them. For each question, there is only ONE correct answer. Please circle your answer by using either blue or black ball pen. Using dictionary and calculator during examination is allowed.

Question 1

In the ancient China, there had already had computing machine. What is the name of it?

(a) Jacquard Looms

(b) Abacus

(c) Difference machine

(d) Sticks

Question 2

What was the original use of computers?

(a) Telecommunication.

(b) Internet access.

(c) Computation.

(d) Data storage.

Question 3

Which of the following electronic technologies is the key technology for making the *first generation electronic computer*?

(a) Vacuum tube

(b) Transistor

(c) Resistor

(d) Capacitor

Question 4

Which of the following electronic technologies is the key for making the personal computer in the 1970s?

(a) Transistor

(b) Integrated circuit

(c) Microprocessor

(d) Nanotechnology

Question 5

What is the name of the first electronic computer in UK?

(a) ENIAC

(b) Z3

(c) UNIVAC

(d) Colossus

Question 6

During World War II, which country successfully broke the encryption code of German messages?

(a) US

(b) France

(c) UK

(d) Austria

Question 7

In UK, which company successfully built the first commercial computer?

(a) Lyon

(b) LEO

(c) Mauchly & Eckert Company

(d) Remington Rand

Question 8

In US, which company successfully built the first commercial computer?

(a) Lyon

(b) LEO

(c) Mauchly & Eckert Company

(d) Remington Rand

Question 9

What is the contribution of Douglas Engelbart in the evolution of computer?

(a) Develop the first mouse.

(b) Develop the first operating system.

(c) Develop the first power generator.

(d) Develop the first vacuum tube.

Question 10

Who invented the vacuum tube?

(a) Thomas Edison.

(b) Charles Babbage.

(c) John Ambrose Fleming.

(d) John Vacuum.

Question 11

What is the major problem in the first generation personal computer, like Apple I?

(a) The operating system interface is command based. It is not user friendly.

(b) The size of a personal computer is very big. The CPU is not made of microprocessor.

(c) The price of a personal computer is very expensive.

(d) It is unable to connect to the Internet.

Question 12

Which of the following item(s) has(have) a computer installed?

(i) Aeroplane

(ii) Spaceship

(iii) High speed railway

Answer:

(a) (ii) only

(b) (i) & (ii) only

(c) (i) & (iii) only

(d) (i), (ii) & (iii)

Question 13

Which of the following statement(s) is(are) true?

(i) Without electricity, it is not possible to have an information system.

(ii) Without computer, it is not possible to have an information system.

(iii) The function of an information system is determined by the business operations.

Answer:

(a) (i) only

(b) (i) & (ii) only

(c) (iii) only

(d) (ii) & (iii) only

Question 14

By management level, which type of the following information systems is the key information system within an organization?

(a) Transaction processing system.

(b) Management information system.

(c) Decision support system.

(d) Executive information system.

Question 15

Which of the following operating system is commonly used in building websites due to its stable characteristic and its open source code?

(a) Android

(b) Linux

(c) MS Window

(d) Mac OS

Question 16

Which of the following items are part of information technologies ?

(i) Projector

(ii) Internet Explorer

(iii) Internet

Answer :

(a) (i) & (ii)

(b) (ii) & (iii)

(c) (i) & (iii)

(d) (i), (ii) and (iii)

Question 17

Which of the following dotcom whose business model follows C2C?

(a) Alibaba

(b) 7net

(c) Travelocity

(d) Google

Question 18

Which of the following is wrong?

(a) Alibaba is an e-commerce firm.

(b) 7net is an e-commerce firm.

(c) Travelocity is an e-commerce firm.

(d) Google is an e-commerce firm.

Question 19

Which of the following statement(s) is(are) true?

(i) All arithmetic operations can be implemented by logic gates.

(ii) Representing a negative number in 2's-complement formate can let addition/subtraction easily be done by using full adder.

(iii) All logic operations can be implemented by NAND gates.

Answer :

(a) (i) & (ii)

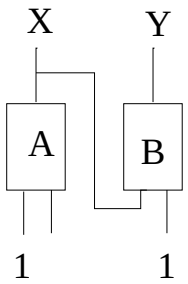
(b) (ii) & (iii)

(c) (i) & (iii)

(d) (i), (ii) and (iii)

Diagram for Questions 20-24

The following schematic diagram is for Question 20 to Question 24. It is a circuit consisting of two logic gates.



Question 20

What are the output values X and Y if A is an XOR gate, B is an AND gate and the input (from left to right) is 101.

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 21

What are the output values X and Y if A is an OR gate, B is an OR gate and the input (from left to right) is 111.

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 22

What are the output values X and Y if A is an AND gate, B is an XOR gate and the input (from left to right) is 101.

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 23

What are the output values X and Y if A is an OR gate, B is an NAND gate and the input (from left to right) is 111.

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 24

What are the output values X and Y if A is an NAND gate and B is an NAND gate and the input (from left to right) is 111.

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 25

For unsigned integer, what is the maximum number that can be represented by an 8 bits formate?

(a) 2^7

(b) 2^8

(c) $2^7 - 1$

(d) $2^8 - 1$

Question 26

What is the value of the unsigned integer '11111011' in decimal form?

(a) 247.

(b) 251.

(c) 253.

(d) None of the above.

Question 27

What is the value of the unsigned integer '1000000000000000' in decimal form?

(a) 2^{17}.

(b) 2^{16}.

(c) 2^{15}.

(d) None of the above.

Question 28

What is the value of the unsigned integer '1111111111111111' in decimal form?

(a) $2^{17} - 1$.

(b) $2^{16} - 1$.

(c) $2^{15} - 1$.

(d) None of the above.

Question 29

Convert 20_{10} in **8-bit 2'S complement formate**.

(a) 10010100_2

(b) 00010100_2

(c) 10001010_2

(d) 00001010_2

Question 30

Convert -20_{10} in **8-bit 2'S complement formate**.

(a) 10010100_2

(b) 00010100_2

(c) 11101011_2

(d) 11101100_2

Question 31

Convert 148_{10} in **16-bit 2'S complement formate**.

(a) 0000000010010100_2.

(b) 0000000100010100_2.

(c) 0000001010010100_2.

(d) 0000000101010100_2.

Question 32

Convert -148_{10} in **16-bit 2'S complement formate** and then convert this binary bit patterns in hexadecimal form.

(a) $FEEB$.

(b) $FF6B$.

(c) $FF6C$.

(d) $FEEC$.

Question 33

x and y are two binary numbers which are in **4-bit 2's complement formate**, where

$$x = 0010_2 \text{ and } y = 1101_2.$$

Clearly, y is a negative number. What is the result of $x + y$ in decimal formate?

(a) 1_{10}

(b) -1_{10}

(c) 0_{10}

(d) -7_{10}

Question 34

The truth table of an half adder is shown below.

A	B	C	D
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

The implementation of this half adder can be done by two logic gates, say X and Y. Logic gate X is with A and B as input and C as output, while logic gate Y is with A and B as input and D as output. What should logic gates X and Y are?

(a) X is a OR gate, while Y is an AND gate.

(b) X is a XOR gate, while Y is an AND gate.

(c) X is a AND gate, while Y is an OR gate.

(d) X is a AND gate, while Y is an XOR gate.

Question 35

The following is the truth table of a full adder. What are the values X and Y?

A	B	D	C	Z
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	X
1	0	1	1	0
1	1	0	1	0
1	1	1	1	Y

(a) $X = 0, Y = 0$.

(b) $X = 0, Y = 1$.

(c) $X = 1, Y = 0$.

(d) $X = 1, Y = 1$.

Question 36

C Programming language is _____ for building a software.

(a) a communication scheme

(b) a coding scheme

(c) a Visual Basic interface

(d) a .NET interface

Question 37

Which of the following statement(s) is(are) true?

(i) All digital logic circuits can be built by using NAND gates only.

(ii) All digital logic circuits can be built by using AND gates only.

(iii) All digital logic circuits can be built by using XOR gates only.

Answer:

(a) (i) only.

(b) (ii) only.

(c) (iii) only.

(d) None of them.

Question 38

For a binary number which is represented in 6-bit 2's complement formate, what are the numbers that can be represented?

(a) -15 to 15.

(b) -31 to 31.

(c) -63 to 63.

(d) 0 to 63.

Question 39

Which of the following statement(s) is(are) true?

(i) Smartphone is able to connect to the Internet via 3G telcom network.

(ii) Smartphone is able to connect to the Internet via WiFi.

(iii) Smartphone is a combination of computer and telephone.

Answer:

(a) (i) only.

(b) (ii) only.

(c) (i) and (ii) only.

(d) (i), (ii) and (iii).

Question 40

To learn the following skills, students would need to have different knowledge with different level of difficulties.

(i) Knowing how to use Window 8.

(ii) Knowing how to build Window 8.

(iii) Knowing how to use Internet Explorer.

(iv) Knowing how to build Internet Explorer.

In accordance with their knowledge levels, which of the following rankings is correct?

(a) $iii > iv > i > ii$

(b) $iv > iii > ii > i$

(c) $i > ii > iii > iv$

(d) $ii > i > iv > iii$

(Note: By $X > Y$, skill X requires more knowledge than skill Y.)

Question 41

Which of the followings is (are) digital system(s)?

(a) CPU

(b) Internet

(c) Personal computer

(d) All of the above

Question 42

Which of the following language is the lowest level language?

(a) Machine code.

(b) C language.

(c) Assembly language.

(d) SQL.

Question 43

What is the maximum number that can be represented by using 16 bits unsigned binary number?

(a) $2^{16} - 1$

(b) $2^{15} - 1$

(c) $1 - 2^{16}$

(d) $1 - 2^{15}$

Question 44

What is the minimum number that can be represented by using 16 bits 2's complement?

(a) $2^{16} - 1$

(b) $2^{15} - 1$

(c) $1 - 2^{16}$

(d) $1 - 2^{15}$

Question 45

With reference to ASCII code, what are the bit patterns of the characters '0', '1' and '2'?

(a) 00110010, 00110001, 00110000

(b) 00110000, 00110001, 00110010

(c) 00011110, 00011111, 00100000

(d) 00100000, 00011111, 00011110

Question 46

With reference to ASCII code, what are the bit pattern of the string '0 1'? (Note that there is a space between '0' and '1'?

(a) 001100000011000000110001

(b) 001100000010000000110001

(c) 001100000011000000110000

(d) 001100000010000000110000

Question 47

In the ASCII code table, there are many strange characters like codes from number 128 to 159. What are the reasons why we need to consider these characters?

(a) To support European language.

(b) To support Asian language.

(c) To support African language.

(d) To support South American language.

Question 48

In the ASCII code table, what is the purpose to have the strange characters from code number 176 to code number 178?

(a) To support graphical visual effect.

(b) To support European language.

(c) They are redundant, no special purpose.

(d) None of the above.

Question 49

In accordance with ASCII code, each English character is represented by 8 bits. For Chinese characters, what is number of bits required?

(a) 8 bits

(b) 16 bits

(c) 24 bits

(d) 32 bits

Question 50

In accordance with ASCII code, each English character is represented by 8 bits. For Korean characters, what is number of bits required?

(a) 8 bits

(b) 16 bits

(c) 24 bits

(d) 32 bits