	DEPARTMENT OF MATHEMATICS TANTA UNIVE RSITY FACULTY OF SCIENCE (Computer Science Division)	
	EXAMINATION FOR PROSPECTIVE STUDENTS (2ND YEAR)	
	COURSE TITLE: معالجة الملفات	COURSE CODE: CS2105
DATE:05-01-2017 JAN 2017	TERM: 1	TOTAL ASSESSMENT MARKS:150 TIME ALLOWED: 2 HOURS

Solve the following Questions

Question 1: (30 Marks)

a- Compare between physical and logical files?
b- Mention in brief types of allocation methods?
c- Why do we need files to be stored on secondary storage devices?

Question 2: (30 Marks)

a- List the actions which are carried out when a disk read is requested?
b- We have a fixed-length records (number of records =2000, size of record = 512B, sector size = 512B, sector/track=60, track/cylinder = 16) How many track and cylinders are needed?

Question 3: (30 Marks)

a- Define the following terms Cluster and Extent ?
b- Disk characteristics or specifications (20 platters, 100 track/surface, 200 sector/track, sector size = 512 byte, average seek time = 50 msec, R.T.=250 msec) compute the access time with randomly access and sequential access in both sector and cluster organizations?(cluster consists 5sectors)

Question 4: (30 Marks)

a- Why we need data compression?
b- Let A= {a/11, b/20, c/5, d/55, e/45} be the alphabet and its frequency distribution. Find the Huffman code for this alphabet.

Question 5: (30 Marks)

a. List the placement strategies for new recodes?
b. What are the basic operations on indexes?
c. List the two main alternative of indexing?

With best regards

Mathematics Department , Faculty of Science ,Tanta University		
Branch: Math. Dept.		Sub-branch : Computer Science and Mathematics
Examination for : Level two		Term: first Term 2016-2017
Course Title: Discrete Mathematics		Course Code: MA2107
Date: 22/1/2017	Total Mark: 100 marks	Time Allowed: 2 Hours

Answer the following questions: naming

Question 1 (25 marks):

a) Draw Hasse diagram of the lattice D_{30} of all positive integers divisors of 30 and then answer the following:

(i) What is the algebraic properties of the lattice D_{30}?. **(3 marks)**

(ii) Find a complement of each element if it exist . **(3 marks)**

(iii) Let $X = \{a, b, c\}$, is the algebraic structure of $P(X)$ (the set of all subset of X) isomorphic to D_{30}. Justify you answer. **(7 marks)**

b) Given Boolean function :

$$f(x, y, z, w) = x`y`z`w + x`yz`w + xyz`w + xy`z`w$$

(i) Draw logic circuit represents $f(x, y, z, w)$. **(4 marks)**

(ii) Simplify $f(x, y, z, w)$ by using Karnaugh maps. **(4 marks)**

(iii) Construct the truth table of the simplest form and represent it by logic circuit. **(4 marks)**

Question 2 (26 marks):

a) Let $A = \{1,2,3,4\}$ and let R and S be the relations on A described by

$$M_R = \begin{pmatrix} 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}, \qquad M_S = \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \end{pmatrix}$$

(i) Find the matrix $M_{R \cup S}$ by using the matrices M_R and M_S and then find the relation $R \cup S$. **(6 marks)**

(ii) Find the smallest equivalence relation containing $R \cup S$ and its matrix. **(6 marks)**

(iii) Draw directed graphs of this equivalence relation and the relation $R \cup S$ and then compare between them in terms of : degree of vertices, loops and number of edges between each two vertices. **(8 marks)**

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	DEPARTMENT OF MATHEMATICS TANTA UNIVE RSITY FACULTY OF SCIENCE (Computer Science Division)	
	EXAMINATION FOR PROSPECTIVE STUDENTS (2ND YEAR)	
COURSE TITLE: برمجة حاسب	DATE: 10/1/2017	COURSE CODE: CS2103

Question 1:

a. Describe the three main components of any Function? Describe the differences between functions and Macros? Define a macro called "birthday" which describes the day of the month upon which your birthday falls.

b. Write a program to swap two numbers using a function?

c. Can you change the known names of data types of variables? Explain by an example?

Question 2:

a. What is the definition of structure, write its form? What is the difference between Structure and Union? Define the array of structures?

b. Create an array of a student structure. Each structure has 2 members, roll_no and names with 20 characters? Write a program that enters the values of the members and then print out these values on the screen?

c. Explain the meaning of each of the following: #define Max 25; float f=23.4 num = (int)f; #define Cube(a) a*a*a.

Question 3:

a. What is the definition of a pointer? What is the relation between pointers and arrays? What do the symbols * and & mean, when they are placed in front of an identifier? Why is it incorrect to declare: float *number = 2.65; ?

b. Write a program to add two numbers using pointers?

c. What is the output of this C code?

```
1.  #include <stdio.h>
2.  int main()
3.  {       int *ptr, a = 10;
4.      ptr = &a;
5.      *ptr += 1;
6.      printf("%d,%d/n", *ptr, a);    }
```

Question 4:

a. What is the definition of an array? What is the difference between array and variables? Write a program for finding the largest element and average of an integer array?

b. Write a program that concatenates two string arrays then calculates the size of new array?

c. How to describe the two dimensional array, Give an example? How to initialize the two dimension array by characters?

EXAMINERS	DR/ RASHA ELAGAMY	PROF. DR./ ATEF ABD ELGALIL

With my best wishes

علوم حاسب

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF MATHEMATICS	
	EXAMINATION FOR (LEVEL TWO) STUDENTS OF COMPUTER SCIENSE	
	COURSE TITLE: COMPUTER SYSTEMS	COURSE CODE: CS2101
DATE: 15-1-2017	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

Answer the Following Questions:

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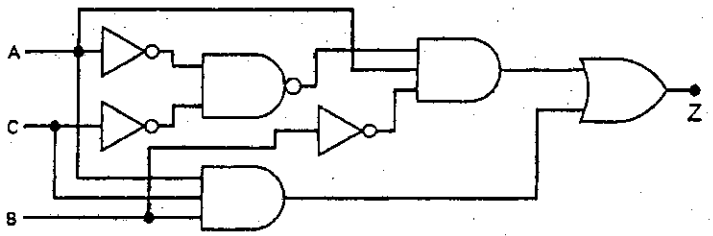
QUESTION 1: [Total marks: 50]

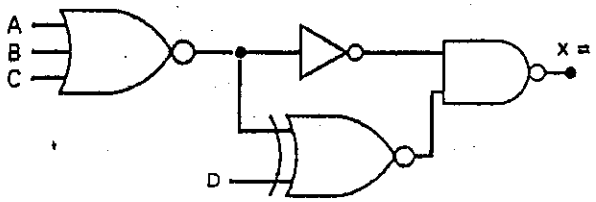
1. Simplify the following circuit using: (15 marks)
   a. Boolean algebra.
   b. K map.



2. Design the logic circuit that has four inputs, A, B, C, and D, and its output is 1 when the majority of inputs are 1. (25 marks)
3. How many bits are required to represent an 8-digit decimal number in BCD? (5 marks)
4. Why can't the parity method detect a double error in transmitted data? (5 marks)

QUESTION 2: [Total marks: 50]

1. What is the largest decimal value that can be represented in binary using two bytes? (5 marks)
2. Determine the Boolean expression for the circuit: (5 marks)



3. For each of the following find (with full steps) the lost number according to the associated radix. (40 marks; 4 marks for each)
   a. $(ABFD)_{16} = (\ldots\ldots\ldots\ldots)_8$
   b. $(4533)_8 = (\ldots\ldots\ldots\ldots)_{10}$
   c. $(3456)_{10} = (\ldots\ldots\ldots\ldots)_{BCD}$
   d. $(1111001001)_2 = (\ldots\ldots\ldots\ldots)_{10}$
   e. $(111000111000)_{BCD} = (\ldots\ldots\ldots\ldots)_{10}$
   f. $(119)_{10} = (\ldots\ldots\ldots\ldots)_8$
   g. $(CCC)_{16} = (\ldots\ldots\ldots\ldots)_{10}$
   h. $(999)_{10} = (\ldots\ldots\ldots\ldots)_{16}$

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