جامعه المنصوره　　قسم هندسه الانتاج والتصمصم　　انتاج كليه الهندسه

الماده تطبيقات حاسب　　الفرقه الثانيه

التاريخ :16-1-2013　　الزمن 3 ساعات

Try all the following

Question 1　　30 Point

Explain the following with examples

1-Concept of optimization 2-AI and its fields of applications? 3-Microcontroller	4-Expert system components 5-Logic Gates (AND,OR, NOT) with its truth table 6-Robot Types and Applications

Question 2　　30 Points

A-

Construct an algorithm and a flowchart to issue grades to students. Use the following criteria:

if score is between 90 and 100, then grade = A
if score is between 89 and 80, then grade = B
if score is between 79 and 70, then grade = C
if score is between 69 and 60, then grade = D
if score is below 60, then grade = F.

B-

Construct an algorithm and a flowchart to compute the number of combinations c into which you can organize a class of n students into groups of i and $n-i$ using the formula below. Use a separate module to compute the factorial.

$$c = \frac{n!}{i!(n-i)!}$$

Question 3　　10 Points

At a certain refinery, the refining process requires the production of at least two gallons of gasoline for each gallon of fuel oil. To meet the anticipated demands of

winter, at least three million gallons of fuel oil a day will need to be produced. The demand for gasoline, on the other hand, is not more than 6.4 million gallons a day.If gasoline is selling for $1.90 per gallon and fuel oil sells for $1.50/gal, how much of each should be produced in order to maximize revenue?

Question 4 — 20 Points

Using Number System Conversion convert the following from binary to 8^{th} and 16^{th} system?
A- 0111111110001, B- 100001111111111100, C-00001111111111111100
D-11111111111111001111111111111

Question 1 — 10 Points

Consider the following Datalog knowledge base:

Facts:	**Rules:**
1. parent(elizabeth,charles). 2. parent(philip,charles). 3. parent(elizabeth,anne). 4. parent(philip,anne). 5. parent(charles,william). 6. parent(charles,harry). 7. female(elizabeth). 8. male(philip). 9. male(charles). 10. female(anne). 11. male(william). 12. male(harry).	13. grandparent(X,Z):- parent(X,Y), parent(Y,Z). 13. grandfather(X,Y) :- grandparent(X,Y) , male(X). 14. grandparent(X,Y) ^ female(X) => grandmother(X,Y). 15. ancestor(X,Y) :-parent(X,Y). 16. ancestor(X,Z) :-. parent(X,Y), ancestor(Y,Z).

A- How to extend your system by building the following rules (write rules in details)	B-Use that rules with the previous knowledge to answer the following and write all the following?
1-Father 2-Mother 3-Son 4-Sister 5-Brother 6-grandparent 7- grandfather 8- grandmother	grandfather(philip,harry)? Yes or No Who is son of whom? Who is sister of whom? Who is brother of whom? Who is father of whom? Who is mother of whom? Who is ancestor of whom ?