

ع حاسبان قديم

بسم الله الرحمن الرحيم
التاريخ : 2009 /1/29
الزمن : ساعتان

المادة/ دراسات الجدوى للمشروعات
الفرقة الرابعة (الأقسام الكهربائية)
لانحة قديمة

جامعة طنطا
كلية الهندسة
قسم هندسة الإنتاج والتصميم الميكانيكي

أجب عن الأسئلة الآتية:- (40 درجة)

السؤال الأول:-

- 1- الجدوى التسويقية هي إحدى مكونات دراسة الجدوى الاقتصادية - تكلم باختصار عن الجدوى التسويقية.
- 2- تكلم بالتفصيل عن عناصر التصنيع.

السؤال الثاني:-

- 1- يمكن تقسيم المصنع على حسب طرق عمليات الانتاج والتخطيط الى ثلاثة أقسام رئيسية اكتب نبذة مختصرة عن هذه الأقسام.
- 2- تكلم عن أهم:-
(أ)- العوامل المؤثرة في حجم مرونة الطلب.
(ب)- العوامل التي يترتب عليها نقصان أو زيادة العرض.
- 3- ما المقصود بكل من :-
1- شركة التضامن
2- الشركة المساهمة
مع شرح لأهم مزايا وعيوب كل نوع.

السؤال الثالث:-

- 1- المقصود بالمخزون - ولماذا نحتفظ بالمخزون؟
- 2- ما المقصود بالجودة - اشرح باختصار مراحل تطور الرقابة على الجودة .

مع أطيب التمنيات بالنجاح
ا.د/ عبد الفتاح مصطفى خورشيد



Answer the following questions:

1- For the circuit shown in Fig 1

- Obtain the transfer function?
- Draw the equivalent block diagram?

رابعه ما بين قدم
متر: التكميل والسياسة لعملية التكميل

2- For block diagram shown in Fig 2

- Based on block diagram reduction, Determine the overall transfer function?
- Determine the overall transfer function Mason's formula?

3-

- What are the basic components for data acquisition system? Draw the block diagram?
- What is the sensor?
- What are the different types for sensors?
- What are the characteristics for sensor?

4-

- What is the meaning of signal conditioning? Discuss the different ways for signal conditioning?
- Explain with figures the different methods for input channel configuration for data acquisition system?

5

- Define the system noise? What are the types of system noise?
- Classify the filter type based on the components and the order? Explain with figures?

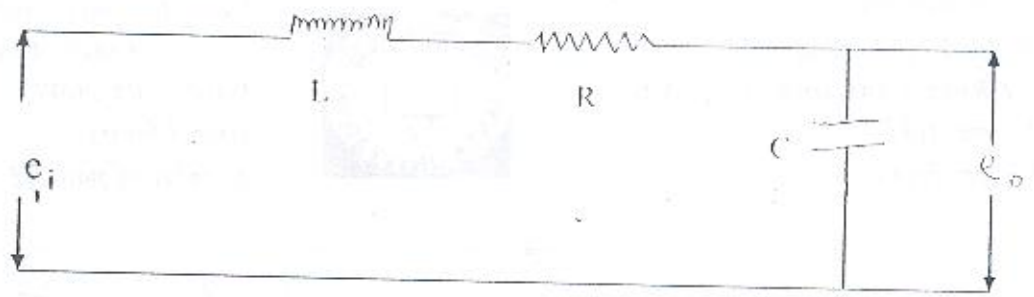


Fig (1)

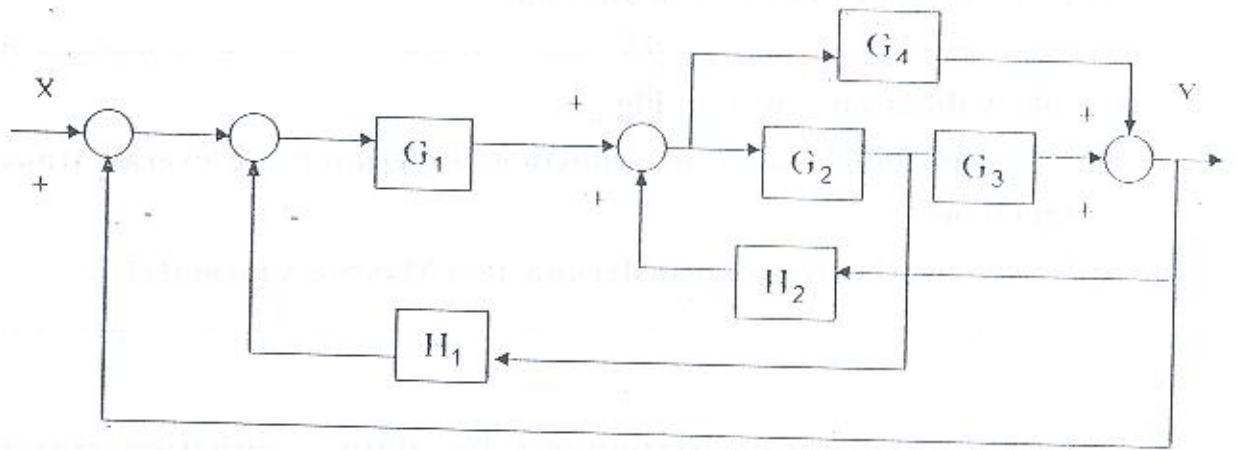


Fig (2)

With my best wishes
 Dr. Magdy G. El-ghatwary

Question 1:

- Show how to create a data source for a database application. Then show how to make a connection to this database to your application.
- Show how to open a file to insert and read data from using an example.

Question 2:

- Define what is meant by the following terms:

Inheritance , Sealed class, Polymorphism. Give example for each.

- Define a class called shape which has 3 subclasses: square, circle and triangle. Each has methods to compute its area and circumference (المساحة والمحيط).

Make a suitable interface that chooses the type of the object's shape through three different buttons one for each shape. Then when you choose the shape, a new form appears that asks you to input the required dimensions of the chosen shape. Then when you press OK button on this form, its area and circumference is shown to you.

Question 3 :

- Make a proper interface design and write the code for a c# program that contains two integer arrays which is required to add to each other and show the result to the user.
- Modify the above program to be able to input the values of the two arrays from outside.

Have a Good Exam,
Dr. Amany Sarhan

Old Bylaw

Tanta University
Faculty of Engineering
Computers and Control Department

Fourth Year Students
First Term Exam
January 2009

Elective Specialized Course (3)

Database Systems

Answer the following *four* questions. Time allowed: 3 hours.

Question 1

- (a) Give a definition for the database management system (DBMS). What are the merits and drawbacks (if any) of DBMSs?
- (b) Specify the task of the database administrator (DBA).
- (c) What is meant by a 'key', 'superkey', and 'primary key' in relational data models? What do you understand from the expression 'key by chance'?
- (d) Verify that every relation has a key.
- (e) Discuss the problem of NULL values.
- (f) Write a short account on relational catalogues.

Question 2

Consider the four-relation database given in Fig. 1.

- (a) Describe, in words, the information involved.
- (b) Determine the primary keys and referential integrity constraints.
- (c) What are the attributes on which NULL values are allowed?

Question 3

Consider the two-relation database given in Fig. 2. Use relational algebra to write expressions for the following queries, showing the result in each case.

- (a) Find the numbers of the supervisors of the employees earning more than 40000 pounds.
- (b) Find the names, ages, and salaries of the supervisors of the employees earning more than 40000 pounds.
- (c) Find the employees who earn more than their respective supervisors, giving the numbers, names, and salaries of both the employees and the supervisors.
- (d) Find the numbers and names of the supervisors whose employees all earn more than 40000 pounds.

Question 4

- (a) Write a short account on the families of SQL domains that allow representation of exact and approximate numeric values.
- (b) Give a set of SQL commands that can construct a relation

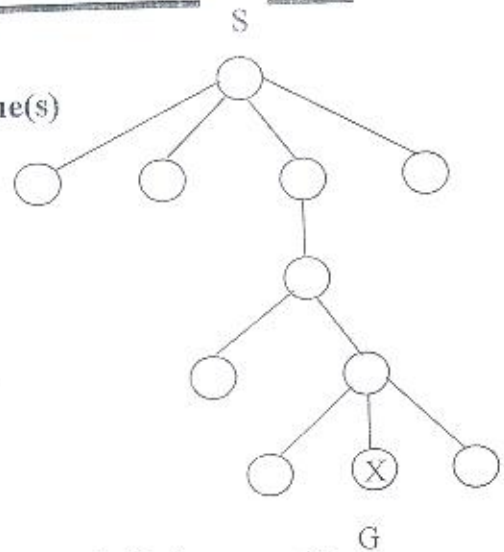
TRAINEE (ID, FirstName, Surname, Specialization)

with the following specifications:

- The attribute ID is a primary key, with domain char (10).
- The attributes FirstName and Surname are each subject to a constraint not null, with domain char (20).
- The attributes FirstName and Surname, taken together, are subject to a constraint unique.
- The attributes Specialization, with domain char (15), refers to an attribute Career in another relation TRAINER, thus constituting a foreign key.
- The foreign key specified above has correction policies of set default for deletions and no action for updates.

Question 1:

(a) In the adjacent search tree, which search technique(s) could produce such a tree. Explain your answer by putting any data on the tree. After choosing the possible search technique answer the rest of the questions.



(b) How many nodes are stored in memory in this tree.
(c) Are there any other nodes in this tree? If your answer is yes, where are they?

Question 2:

a) Define what is meant by the following terms:

- i) Agent
- ii) K.B.
- iii) Heuristic function
- iv) Inference rules

b) Given the following facts, can you deduce whether S true or not.

1. P, Q
2. $P \wedge Q \rightarrow (R \vee S)$
3. $\neg R$

c) What are the differences, advantages and disadvantages of Propositional logic (PL) and First Order Logic (FOL)?

Question 3 :

a) Fill in the spaces:

- 1) In ----- type of agents, the action performed depends only on the current percepts.
- 2) Before performing the search, the ----- formulation should be specified before the ----- formulation.
- 3) Among the NLU problems are -----, -----, and -----.
- 4) When we work under uncertainty, we use ----- to represent the relation between the facts.

b) Represent the following statements using first order logic. Use only the following predicates:

- Bigger(x,y) is true if and only if x is bigger than y.
- Apple(x) is true if and only if x is an apple.
- Red(x) is true if and only if x is colored red.
- Delicious(x) if and only if x tastes delicious.

The statements are:

- 1) All red apples are delicious.
- 2) Every delicious apple is bigger than some red apple.

c) The following sentence is ambiguous: "Everybody loves somebody." It could mean that everybody has somebody that they love, or it could mean that there is a specific person that everybody loves—the sentence just doesn't say who the "somebody" is. Translate both versions into FOL.

d) What are the different types of knowledge representation. For each type give an example for the common representation techniques.

Solve The Following Questions

Question 1 (12 Mark)

- a) **Sketch** the dynamic characteristics of a thyristor, and then **define** the delay and rise time.
- b) Single-phase half wave rectifier is used to charge a battery of 50 V and 300 W-H capacity. If the input voltage is 240 V is connected to rectifier transformer with 3:1 turns ratio is used, find: (i) the diode conduction angle; (ii) the value of resistance that connected in series with the battery to maintain the average value of output current at 5 A; (iii) the charging time; (iv) the power losses through connected resistance; (v) the circuit efficiency; (vi) input power factor

Question 2 (14 Mark)

- a) **Derive** an expression of phase currents during commutation period in three-phase full converter.
- b) Three phase full converter is used to feed highly inductive load of 10 Ω resistance and sufficient inductance to maintained output current smooth without ripple content. If the converter is connected to 380 V, Y-connected three phase supply and the average value of output voltage is 75 % of maximum average output voltage, **calculate**: (i) the converter delay angle; (ii) the average value of load current; (iii) the average and rms of SCR current; (iv) the input power factor and transformer utilization factor; (v) **sketch** the required waveforms.

Question 3 (16 Mark)

- a) **Explain** briefly the principles of step-up DC-chopper, then **illustrate** the condition required to be used to charge DC source
- b) Boost regulator has an input voltage of 9 V and switching frequency of 20 kHz. If the average output voltage of 20 V and the load current is 0.6 A, **determine**: (i) the duty

cycle; (ii) the peak to peak ripple current if regulator inductance is $300 \mu\text{H}$; (iii) the peak current of the inductor; (iv) the peak to peak ripple voltage if regulator capacitor is $470 \mu\text{F}$.

Question 4 (14 Mark)

- a) **Explain** briefly applications of power electronics in both DC and AC derives.
- b) Single phase full wave AC voltage controller with resistive load of 10Ω , and input voltage of 220 V . If the delay angle of T_1 is 60° , **determine**: (i) the delay angle of T_2 ; (ii) the rms value of output voltage; (iii) the input power factor; (iv) the rating of T_1 and T_2 .

Question 5 (14 Mark)

- a) **Define** the following terms:
 - (i) total harmonic distortion (THD)
 - (ii) Distortion factor (DF)
 - (iii) Lowest order harmonic (LOH)
- b) Three phase full bridge inverter is used to feed resistive load of 20Ω . If the supply voltage is 200 V , **find** output power (maximum power case), the source current and average and rms value of switch current.

(With Our Best Wishes)
Dr. Fayza Safau & Dr. Ibrahim Bedir