جامعة طنطا
كلية الهندسة
قسم الالكترونات والاتصالات الكهربية

المادة/ اقتصاد هندسى
(EE21III)
الفرقة الثانية (لائحة قديمة)

بسم الله الرحمن الرحيم
التاريخ : 2009 /1/26
الزمن : ساعتان

أجب عن الأسئلة الآتية:- (30 درجة)

السؤال الأول:-

1- " هناك العديد من انواع التكاليف تستخدم فى الاقتصاد الهندسى عند تحليل الجدوى المالية للمشروعات الصناعية" تكلم بالتفصيل عن انواع التكاليف.

2- تكلم عن اهم الخطوات الرئيسية للدراسة الاقتصادية .
3- اشرح بالتفصيل العناصر الاساسية لتصنيع منتج ما.

السؤال الثانى:-

1- اكتب نبذة متصرة عن:-
التكاليف - سياسة الاحتكار - المنفعة الكلية والحدية
2- ما هى العوامل التى تؤثر على الطلب.

3- اقترض شخص ما مبلغ 20000 جنيه على ان يسدد المبلغ بعد 12 سنة بفائدة مركبة 8% احسب المبلغ الذى يلزم سداده فى نهاية المدة.

السؤال الثالث:-

a. ما هى العناصر الاساسية لتكلفة منتج ما.
b. ما اهمية دراسة الجدوى الفنية للمشروعات- مع شرح لأهم المسائل التى تعالجها دراسات الجدوى الفنية.

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

جامعة طنطا
كلية الهندسة
قسم الفيزيقا والرياضيات الهندسية

المـــــــــــادة : رياضيات هندسية (أ)
الزمـــــــــن :٣ساعات
الفرقـــــــة : الثانية (إتصالات- لائحة قديمة)
تاريخ الإمتحان : ٢٨/ ١/ ٢٠٠٩(الفصل الأول)

Answer the questions **[85 Mark]**

Question 1 [40 Mark]

1-a) Fit the readings

x	1.00	1.25	1.5	1.75	2.00	2.25
y	1.12	0.92	0.75	0.61	0.51	0.42

for the exponential curve $y = b\,e^{ax}$

1-b) In an examination the number of students who obtained marks between certain limits were as follows :

Marks	0 - 19	20 - 39	40 - 59	60 - 79	80 - 99
No. of students	41	62	65	50	17

Estimate the number of students who obtained less than 70 marks.

1-c) Evaluate $\int_{4}^{5.2} \ln x \, dx$ correct to 6 decimal by using Simpson s Rule .

1-d) Obtain the estimate of the missing figures in the following table

x	2 .0	2 .1	2.2	2.3	2.4	2.5	2.6
f(x)	0.135	- -	0.111	0.100	- -	0.082	0.074

Question 2 [45 Mark]

2-a) Find the value of y at $x = 2.6$ by using modified Euler s Methods with $h = 0.2$, if $y = \sqrt{x^2 + 4y^2}$, $y\,(2.2) = 1.5$

2- b) Using Gauss - Seidel Method , solve the system of linear equations

$5x_1 - x_2 + 3x_3 = -2$, $x_1 + 5x_2 - 2x_3 = 10$, $2x_1 - 4x_2 + 10x_3 = 6$

2-c) Use the finite difference method with $n = 4$ to approximate the solution of the boundary - value problem

$$y'' + 6.55(x + 1)\,y = 1 \quad , y(0) = 0,\ y(1) = 0$$

Tanta University (لائحة قديمة)
Faculty of Engineering
Dept. of Electrical Power Eng.

2nd year 1st term Exam.
Logic and Electronic Circuits
Time allowed : 3 Hours

Answer the following questions:

1- a- Find the Z- parameters of the T-network that has $Z_a = 8\ \Omega$, $Z_b = 10\ \Omega$, and $Z_c = 12\ \Omega$.
b- Find the ABCD parameters of the ideal transformer that has turns ratio of 10 : 4.
c- Find the input impedance of the ideal transformer that is given in (1-a) when it is loaded by a capacitor of 10 micro Farad.

2- a- Find the Y-parameters of the π-network that has $Y_1 = 0.4$ mho, $Y_2 = j\ 0.4$ mho, and $Y_3 = -j\ 0.3$ mho.

b- A Common Emitter Amplifier has the parameters, $h_{re} = 0$, $h_{ie} = 200\ \Omega$, $h_{fe} = 100$, and $h_{oe} = 100\ \mu$ mho. Also $R_E = R_L = R_C = 800\ \Omega$, $R_1 = 1.3\ k\Omega$, $R_2 = 2.7\ k\Omega$, $R_S = 2\ k\Omega$, and $C_E = C_i = C_o = 20\ \mu$ Farad. Calculate the input impedance, voltage gain, and the current gain.

3-a- Show how you could use the operational amplifier to integrate the following inputs:
$V_a = 5\ \text{Sin}\ \omega t$, $V_b = 5\ t$, $V_c = 5$
b- A five bits A/D converter with resolution 0.5, and $R_F = 0.35$ LSB resistance.
Determine the output voltage when the input voltage is "11010".

4 - Draw the logic circuit of the following functions, and minimize them,

$$F_1 = C + AB\overline{C} + AB$$

$$F_2 = ABC\overline{D} + A\overline{B}C\overline{D} + AB\overline{C}\ \overline{D} + A\overline{B}\ \overline{C}\ \overline{D}$$

5- a- Simplify the functions:

$$F_1 = \sum 0, 1, 2, 3, 4, 6, 7, 8, 12, 13$$

$$F_2 = \overline{A}BC + \overline{A}B\overline{C} + A\overline{B}\ \overline{C} + A\overline{B}C$$

$$F_3 = \overline{A}C + \overline{A}B + A\overline{B}C + BC$$

b- Compare between calculating the value of the following function as Sum of Products and as Product of Sum;

$$F = \overline{A}\ \overline{B} + \overline{A}B + A\overline{B} + AB$$

جامعـــة طنطـــا – كلية الهندسة
قسم هندسة الحاسبات والتحكم الآلي
امتحان الفصل الدراسي الأول للعام الجامعي ٢٠٠٨/٢٠٠٩

الفرقة الثانية إتصالات (قديم)
المادة : هندسة الأشارات والنظم
الزمن : ثلاث ساعات – يناير ٢٠٠٩

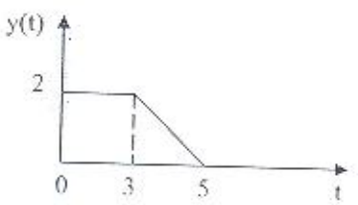
Answer the following questions:

Q1: a) Explain the properties of the system and give an example for each(at least four).

b) Write five groups of the signals and give an example for each.

Q2: Given the following signals:

$$x(t) = u(t) - u(t-2) + u(t-5) - u(t-6)$$



i) Write y(t) in terms of singularity functions

ii) Sketch the signal x(t)

iii) Calculate the energy and the power for the signal y(t)

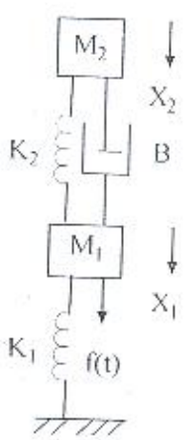
Q3: a) Find y(t) for the following systems:

1) $\frac{Y(s)}{R(s)} = \frac{4}{s^2 + 6s + 5}$ 2) $\frac{Y(s)}{R(s)} = \frac{s+2}{s^2 + 4s + 13}$

for the input is unit step signal.

b) For the mechanical system shown below, find the following

1) Write the differential equations of performance.
2) Determine the transfer function $X_2(s)/F(s)$..

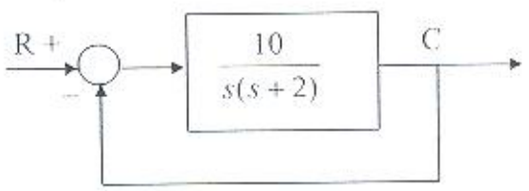


(انظر الصفحة التالية)

Q4: a) Calculate the Fourier Series for the signal

$$x(t) = 4\cos(\frac{\pi}{2}t + \frac{\pi}{4})$$

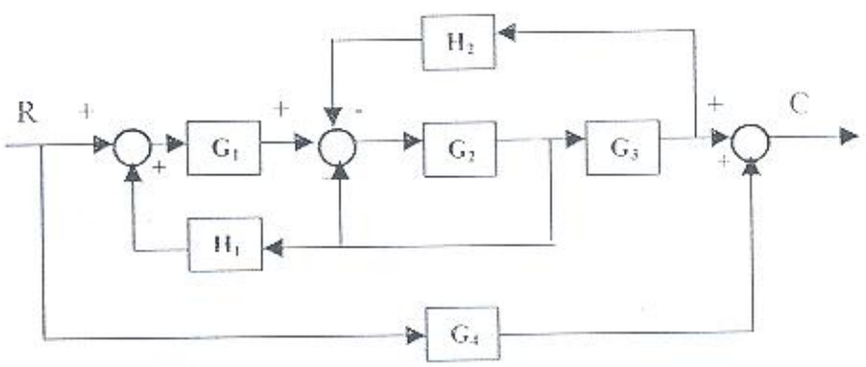
b) For the following system:



1) Determine the natural frequency and damping factor?
2) Compute the percentage overshoot for the step input?

Q5: Determine the transfer function of the system using:

a) Block diagram reduction.
b) Signal flow graph.



مع أطيب الأمنيات بالتوفيق و النجاح

دور أول الكترونيات قديم ٥ أفضلان

Tanta University

Faculty of Engineering
Second Year- First Term
17-01-2009

Communication Department
Electronic Circuits
Time Allowed: Three Hours

Answer All The Following:

1-a-) Draw the circuit diagram of a class B power amplifier, showing the input and output waveforms.

b-) What is meant by "Push-Pull". Draw the circuit diagrams of the two common approaches for using push-pull amplifiers to reproduce the entire waveform.

c-) The n and p-channel E-MOSFETs that are shown in Fig. 1 has a threshold voltage of +0.2 V, and –0.2 V respectively. What resistance setting for R_6 will bias the transistors to class AB operation. At this setting, What power is delivered to the load if the input signal is 100 mV(rms). You may consider that potentiometer R_1 is set to 440Ω.

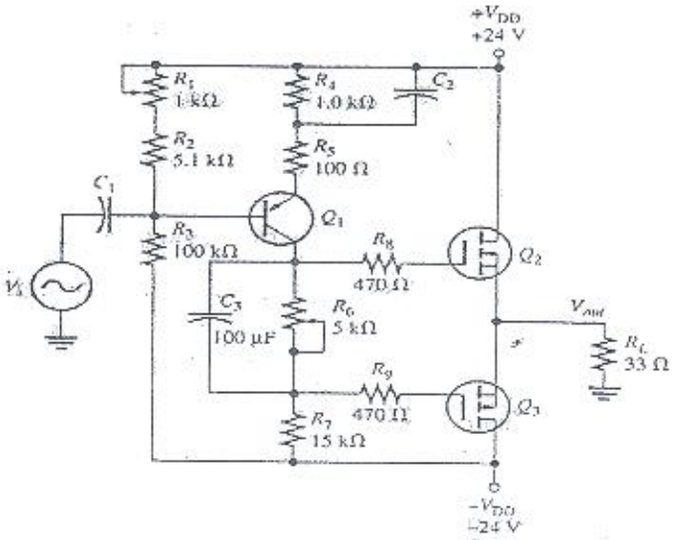


Fig. 1

2-a-) Drive an expression of the input resistance, output resistanc, and voltage gain of the noninverting amplifier using ideal op-amp. If R_1=3 KΩ, R_2=43 KΩ, and V_s=0.1 V, find the output voltage, output current, and the voltage gain of the noninverting amplifier.

b-) Design a noninverting amplifier to have a closed loop gain of 35 dB, and an output esistance of no more than 0.2 Ω. The only op-amp available has an output resistance of 250 Ω. What is the minimum open loop gain of the op-amp that will meet the design requirements.

3-a-) An op-amp differentiator with 1.5msec time constant is driven by a waveform shown in Fig. 2. Draw the output waveform of the differentiator.

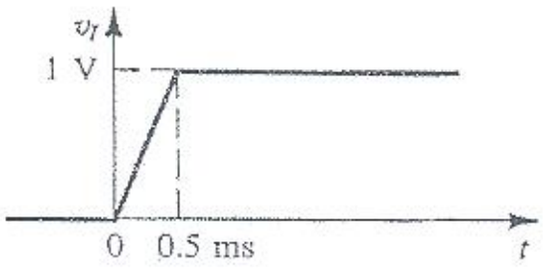


Fig. 2

b-) Design a low pass filter to have an input resistance of 10 KΩ, midrange gain of 10, and a bandwidth of 20 KHz.

P.T.O

c-) For the instrumentation amplifier shown in Fig. 3, if V_1=2.5V, V_2=2.25V, R_1=R_3=15 KΩ, R_2=150 KΩ, and R_4=30 KΩ. Find the values of V_o, V_a, and V_b.

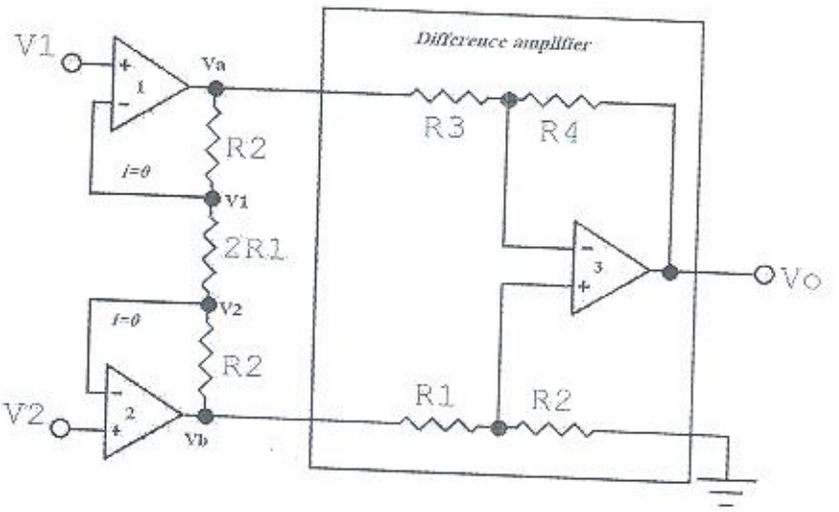


Fig. 3

4-a-) Draw the circuit diagram of the Wien bridge oscillator. Drive an expression for the frequency of oscillations.

b-) Draw the circuit diagram of the phase shift oscillator using three lag circuits. Prove that the frequency of oscillations of the oscillator is $f_r = \frac{1}{2\pi\sqrt{6}RC}$.

5-a-) Draw the circuit diagram of the CB Colpitts oscillator. Drive an expression for the feedback ratio, and the voltage gain needed to start oscillations.

b-) Calculate the oscillating frequency for the oscillator shown in Fig. 4. Assume that, there is negligible loading on the feedback circuit and that its Q is greater than 10. What is the frequency of oscillations if the Q drops to 8.

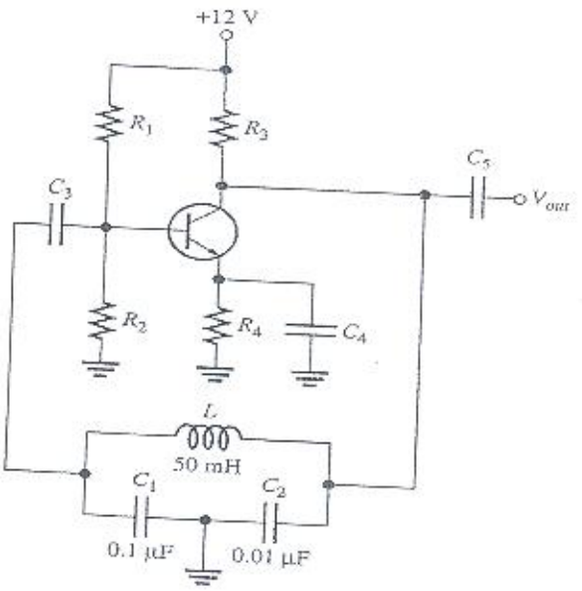


Fig. 4

c-) Draw the schematic diagram of the VCO. If R_1=75 KΩ, R_2=30 KΩ, and C=47 nF. What are the frequency and duty cycle when V_{con}=1 mV.

Best Wishes
Said Elhalafawy

Solve the following problems:

[1] The op amp in Fig. 1 is ideal.

a) Find the range of values for α in which the op amp does not saturate.

b) Find i_o (in microamperes) when $\alpha = 0.12$.

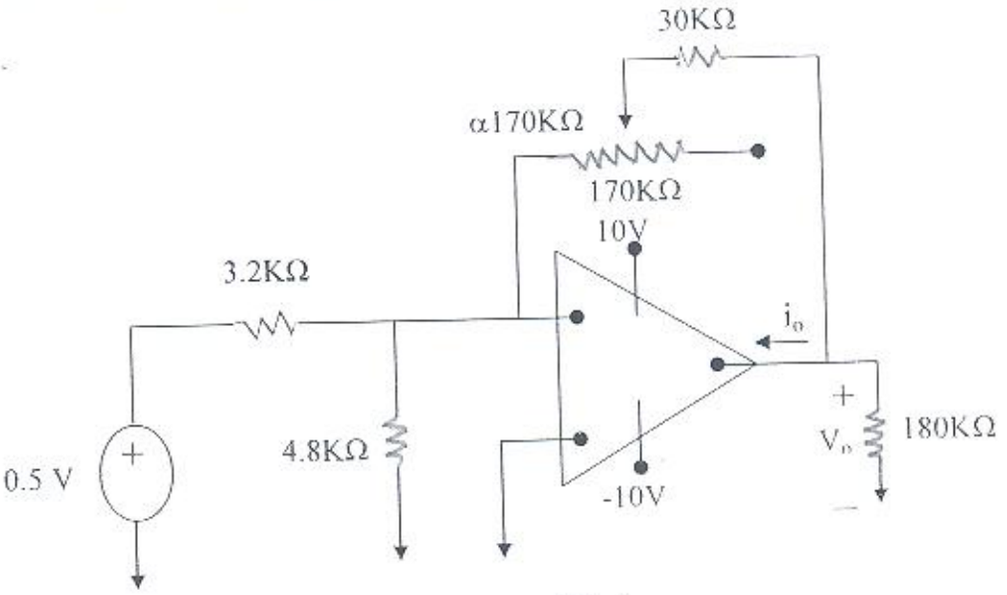


Fig. 1

[2] The switch in the circuit in Fig. 2 has been in position a for a long time. At $t=0$, the switch moves instantaneously to position b.

a) Find i_o (t) for $t \geq 0^+$.

b) What percentage of the initial energy stored in the capacitor is dissipated in the 3 KΩ resistor 500 μs after the switch has been moved to position b.

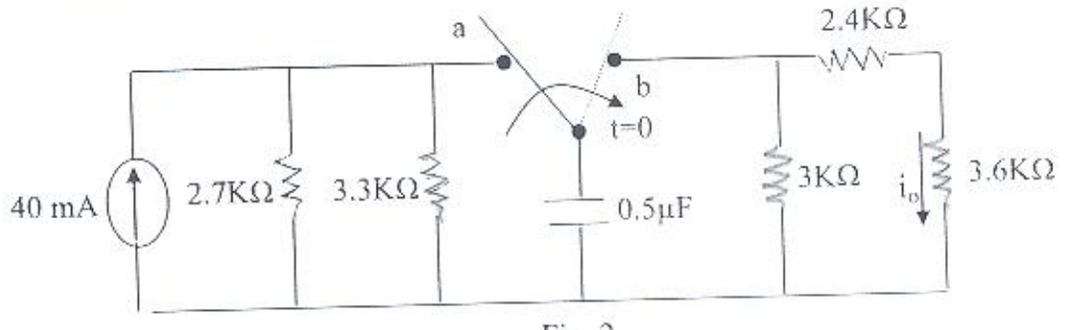


Fig. 2

[3] The switch in the circuit in Fig. 3 has been closed a long time. At $t=0$ it is opened. Find $v_o(t)$ for $t \geq 0^+$.

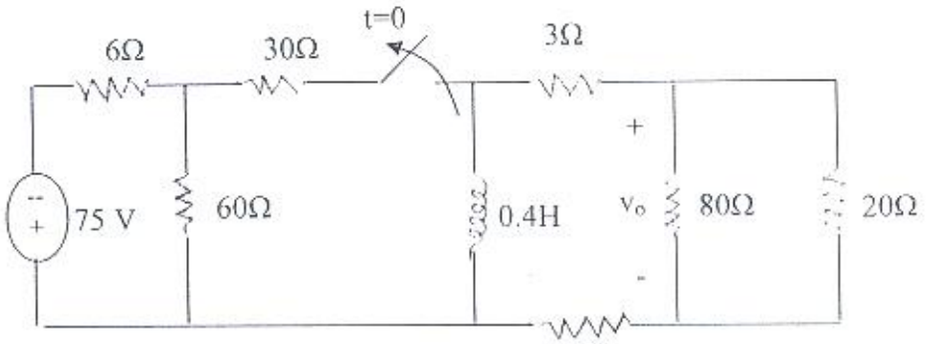


Fig. 3

[4] The switch in the circuit in Fig. 4 has been open a long time before closing at $t=0$. It is opened. Find $i_1(t)$ for $t \geq 0$.

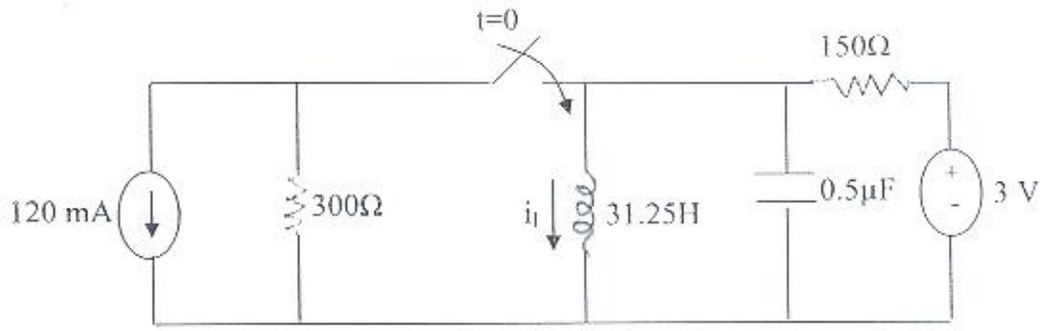


Fig. 4

[5] The switch in the circuit in Fig. 5 has been in position 1 for a long time. At $t=0$, the switch is moved instantaneously to position 2. Find i(t) for $t \geq 0$.

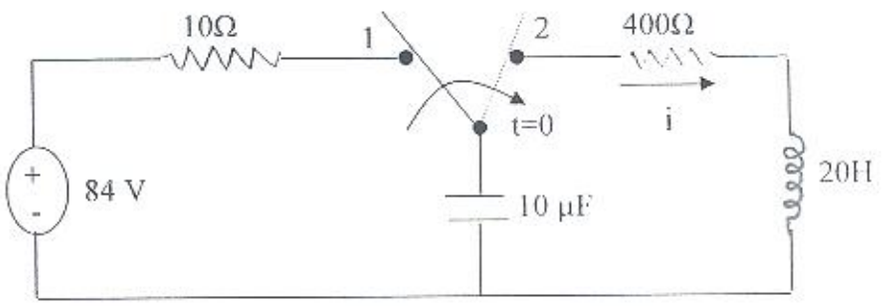


Fig. 5