جامعة الزقازيق
كلية الهندسة
الفرقة الرابعة
اتصالات وحاسبات وقوى كهربية

امتحان
مقرر الإنسانيات

امتحان نهاية الفصل الدراسى الأول
العام الجامعى ٢٠٠٨/٢٠٠٩
الزمن : ساعتان

أجب عن الأسئلة الآتية :

السؤال الأول : (٧ درجات)

(أ) إشرح مستخدماً التحليل البيانى " منحنى إمكانيات الإنتاج " وكيفية الاستدلال به .
(ب) وضح دالة الطلب فى صيغتها الرياضية موضحاً الفرق بين الكمية المطلوبة ومنحنى الطلب .

السؤال الثانى : (٨ درجات)

(أ) " تعتبر نقطة التوازن فى سوق أى سلعة هى المحصلة الأساسية لتفاعل قوتى السوق "
وضح هاتين القوتين ومحدداتهما وآلية إيجاد التوازن بيانياً وجبرياً .
(ب) إشرح بإيجاز (مستخدماً التحليل البيانى ما أمكن)
منحنى عرض العمل المرتد – الأجر التوازنى

السؤال الثالث :

(أ) إذا علمت أن دالة الإنتاج لسلعة معينة هى : **(١٠ درجات)**

$$Q_p = 4\,Q_e - 0.06\,Q^2_e$$

ودالة العرض هى $S = 20 + 5\,P$
ودالة الطلب $D = 80 - 10P$
حيث : Q_p = كمية الإنتاج ، Q_e = الكمية التوازنية ، S = كمية العرض ، D = كمية الطلب ، P = سعر السلعة
أوجد = السعر التوازنى – الكميةى التوازنية – كمية الإنتاج

(ب) صحح العبارات التالية من كان هذا التصحيح مطلوباً (١٠ درجات) .

١- فى سوق العمل يمثل المنتجون ومنظمات الأعمال جانب العرض .
٢- المرونة الدخلية للطلب هى درجة استجابة كمية الطلب للتغيرات التى تحدث فى سعرها .
٣- عند إرتفاع دخول المستهلكين يتحرك منحنى الطلب إلى جهة اليسار ولأسفل .
٤- عند زيادة الطلب على السلعة وزيادة العرض منها بنفس المعدل تنتقل نقطة توازن السوق دون تغير فى الكمية التوازنية .
٥- إذا كانت القيمة المطلقة لمعامل مرونة الطلب أكبر من ١ فإن زيادة سعر السلعة تؤدى إلى زيادة بنسبة اكبر فى حجم الطلب عليها .
٦- سلعة الوقود بالنسبة لسلعة السيارات هى سلعة (وسيطة – رأسمالية – بديلة)
٧- العلاقة بين الطلب على العمل وكل من (عدد السكان - عدد المنتجين – مستوى التقنية) هى علاقة عكسية.

مع أطيب التمنيات بالتوفيق

Course Name: Selected course (4)
Course Code:
Level : 4th year Computer & Control
Department: Electronic and Comm.
Term No. : First

Zagazig university
Faculty of Engineering

Final Term Exam
Date : 11/1/2009
Time : 3 h
No. of pages :1
No. of Questions: 5

Assume any missing data

Attempt all questions:

1-(a) From the first principles of transmission line, derive the equations of current and voltage along the line.

(b) A transmission line has a characteristic impedance of 75 + j 0.01 ohm, and load impedance of 70 + j 50 ohm. Calculate the reflection and transmssion coefficients.

(11 degrees)

2-(a) Use the smith chart to find the input impedance of a section of a 50 ohm loss-less T.L. that is 0.1 long and is terminated in a short circuit.

(b) Starting from the voltage and current equations for a long T.L.

$$V = V_{IN} \cosh \gamma l - I_{IN} Z_0 \sinh \gamma l$$

$$I = I_{IN} \cosh \gamma l - (V_{IN} / Z_0) \sinh \gamma l$$

i- Determine an expression for the input impedance in terms of the characteristic impedance, the load impedance and Z_{oc} (the input impedance when Z_L is replaced by an open circuit).

ii- If $Z_0 = 70$ ohm, $Z_L = 100 \angle 45^o$, $Z_{oc} = 100 \angle -45^o$ and Vin = 100 Volts (rms). Find the power input to the transmission line.

(18 degrees)

3- A transmission line is terminated by a normalized load $\overline{Z}_L = 2$

i- Use a single stub tuner to match this load to the line at frequency f_1 and wave length λ_1.

ii- If the wave length is now increased by 10%, what is the new value of stub susceptance and voltage standing wave ratio (VSWR) on the line.

(13 degrees)

4-(a) A 50 ohm line is connected to a load of 30 + j 60 ohm. Find two possible locations from yhr load where single shunt stub could be used for matching, and the length of stub required in each case. Assume Z_0 of the stub is 50 ohm

(b) Write notes on the static TEM parameters of microstrip line.

(12 degrees)

5- (a) A common air filled rectangular waveguide has a = 0.8 inch and b = 0.4 inch:

i- Find the cut off frequency for the lowest order non trivial TM-mode.

ii- At source frequency that is twice the cut off frequency determine the propagation constant for this mode, the wave length, the phase velocity and the intrinsic wave impedance.

(b) Derive an expression for Z_0 and γ for a low-loss T.L.

GOODLUCK (16degrees)

جامعة الزقازيق – كلية الهندسة
الفرقة الرابعة – لائحة سابقة
مدنى – كهرباء – ميكانيكا ... (جميع الشعب)
مقرر إنسانيات اختيارى ٤ (تحليل سوق العمل)

العام الجامعى ٢٠٠٧ / ٢٠٠٨
امتحان نهاية الفصل الدراسى الأول
يناير ٢٠٠٨
الزمن : ساعتان

الامتحان من ٣ أسئلة متساوية الدرجات – فى صفحتين

السؤال الأول

ضع علامة ✓ إذا كانت العبارة صحيحة. إذا كانت العبارة خطأ أدخل التصحيح اللازم إلى الكلمات التى تحتها خط فقط.

١- يمثل الأفراد الباحثون عن فرصة العمل جانب الطلب فى سوق العمل.

٢- العمل هو عنصر الإنتاج الذى لا يملك القدرة على الانتقال.

٣- جهاز الثمن هو الآلية التى يتم من خلالها فرض ترتيب لأولويات الحاجات وتوجيه الموارد وفقاً لرؤية سلطة مركزية حاكمة.

٤- تعتبر تجارة السيارات مثالاً لسوق المنافسة الاحتكارية.

٥- الفرد غير المسجل فى أى وظيفة لا يدخل فى عداد البطالة إلا إذا حقق شرطين فقط هما القدرة على العمل والرغبة فى العمل.

٦- يزيد معدل البطالة إذا نسبنا عدد العاطلين إلى قوة العمل المدنية.

٧- وجود سعر سائد للسلعة من الأسباب التى تؤدى إلى صعوبة الدخول إلى أو الخروج من سوق احتكار القلة.

٨- لعنصر الإنتاج المتغير - و بافتراض ثبات عناصر الإنتاج الأخرى - يزيد الناتج الحدى وتستمر زيادته إلى مالا نهاية باستمرار زيادة الكمية المستخدمة من العنصر المتغير.

٩- تزيد قيمة معامل مرونة الطلب لإحدى السلع عند القيم المرتفعة للسعر على منحنى الطلب.

١٠- يرى المحاسبون وأصحاب الأعمال الأجر الذى كان يجب أن يحصل عليه صاحب العمل عنصراً من عناصر التكاليف.

١١- السيارات والوقود مثال لزوج من السلع البديلة.

١٢- التنمية المستدامة مفهوم مستحدث للتنمية البشرية يجعل من التنمية إحداث نمو اقتصادى دون الجور على حق الأجيال القادمة فى الاستفادة من الموارد الطبيعية.

السؤال الثانى

إذا كانت كمية الإنتاج (ك) كدالة فى عنصر العمل (ع) باعتباره عنصر الإنتاج المتغير هى: ك = ٩ ع – ٠,٠٥ ع٢

أ- أوجد : (١/أ) دالة الناتج المتوسط لعنصر العمل، ومنها أوجد قيمة الناتج المتوسط إذا كانت كمية عنصر العمل ع = ٦٠ وحدة

(٢/أ) دالة الناتج الحدى لعنصر العمل، ومنها أوجد قيمة الناتج الحدى إذا كانت كمية عنصر العمل ع = ٦٠ وحدة.

(٣/أ) الكمية المثلى لعنصر العمل، وتحقق بالأرقام أنها تعطى أكبر كمية إنتاج.

ب- إذا علمت أن كمية العرض من العمل ع = ٢٠ + ١٠جـ

وكمية الطلب على العمل ع = ١١٠ – ٥جـ

حيث جـ = الأجر الحقيقى

وباستخدام دالة الإنتاج ك = ٩ ع – ٠,٠٥ ع٢ أوجد :

(١/ب) الأجر الحقيقى التوازنى.

(٢/ب) مستوى التوظف التوازنى.

(٣/ب) كمية الإنتاج عند توازن سوق العمل.

Zagazig Uni.
Faculty of Eng.
Date:14/5/2008

Elective Course(5)
4th year-Communication Dept.
Code number:ECE438

Satellite Communication Systems
Final Exam:May 2008
Time allowed:3 H

Answer all questions :

1. (a)Write short notes about:
   i-Ringaround.
   ii- Multiple access formats.
   iii- Selectivity of satellite frequency bands.
   (b)Explain with drawing the block diagram of the transmitting and receiving earth station, and what is the category of earth stations?
   (c)Draw the satellite-earth angles, and then prove that:

$$\Phi_E = \{\text{Cos}^{-1} [r_E \cos \Phi_b / (r_E+h)]\} - \Phi_t$$

(12Mark)

2- (a) What are the advantages and disadvantages of GEO orbit?
   (b)Explain with drawing:
   i-Satellite launching.
   ii-RF front end.
   iii-Forms of satellite systems.
   (b)In a satellite communication system, the satellite has an elenation angle of 10° with height of 1200 km and a planner angle beamwidth of 57°.
   Calculate:
   i)Coverage area.
   ii)Slant range.
   iii)Propagation time.
   iv)Time period that taken by the satellite to pass over a point on the earth for prograde and retrograde orbit.

(11Mark)

3- (a) Explain with drawing Kepler's third law and then show the effects of a nonspherical earth and the oblatness of the earth.
   (b)Draw the earth-orbiting satellite, and then define; Apogee,Inclination and prograde and retrograde orbits.
   (c)A satellite has the following parameters specified:
   Perigee hight 200 km, apogee hight 350 km, inclination 66.7°. Calculate:
   i-The semimajor axis.
   ii-The eccentricity.
   iii-The nominal mean motion and the mean motion.
   iv-The rate of regression of the nodes.

(12Mark)

With my best wishes
Dr.M.Fouad

ZAGAZEG UNIVERSITY **COMPUTER ENGINEERING (1)**
FACULTY OF ENGINEERING **Final Exam. 2004**
3RD YOUR COMMUNICATION **3 Hours**

Answer the following questions:

Q1 a-Draw and discuss the connection between main memory and processor, and discuses the typical operating steps.

b- Discuss in details the program execution time equation, with the effective program parameters.

c- Show by drawing how the most straight word that a 32bit pattern can used to represent a signed integer, four characters, and a machine instruction.

Q2 a- Write the steps and actions, in the control sequence for execution of the instruction ADD (R3), R1

b- Register R5 in a program is used to point to the TOP of a STACK. Write a sequence of instructions using indexes, Auto increment, and auto decrement addressing modes to perform each of the following tasks and show that by sketch:

-Pop the top two items of the STACK, ADD them, and then PUSH the result onto STACK.

-Copy the Fifth item from the TOP into register R3.

-Remove the TOP TEN items from the STACK.

Q3 - In hardwired control draw a complete control unit organization with separation of the decoding And encoding functions, and what is the difference between the organization of the control unit by decoder/encoder and the separation between them.

Q4- In micro routine for the instruction ADD (R1)+, Rs where R1 and Rs are general –purpose registers in the machine, assume the instruction has a 3-bit field used to specify the addressing mode for the source operand, Bits 10 and 9 denote the indexed, auto decrement, auto increment, and register modes, using bit patterns 11, 10, 01, and 00,respectively. Bit 8 is used to specify the indirect version of the addressing mode. Also assume that the CPU has 16 registers that can be used for addressing purposes; these are specified using 4-bit codes. design the IR required and shows the control signals that are achieved by the microinstructions needed to fetch and execute our ADD instruction.

Q5- Consider a cache memory consisting of 128 blocks of 32 words each, for a total of 4056 (4K) words, and assume that the main memory is addressable by a 16-bit address. And has 64Kwords, which we will view as 4K blocks of 16 words each. Draw the main memory, cache, and a number of bits in Tag, Block, and word using Direct-mapped cache.

Q6- **a-** Draw a block diagram for n-bit ripple-carry adder using full adders. Derive an expression for the delay of this adder.

b- what is meant by computer Peripherals State one example?

GOOD LUCK

Course Name : Measurements and testing(1)		Final Term Exam	
Course Code :		Date	: 6 / 1 / 2008
Level : 4th year Comm.	Zagazig University	Time	: 120 min
Department : Comm.&Electr.	Faculty of Engineering	No. of pages	: 1
Term No : 1		No. of Questions :	4

Assume any missing data

Attempt all questions:

1-(a) Show how to measure concentration of flow gasses.

(b) Draw and discuss a principle diagram of measuring system and discuss different techniques for obtaining the mathematical model of measuring system.

2-(a) Discuss the principle of calometery, nepholometry and turbidometry for measuring characteristic of medium.

(b) Write notes on: i- Frequency to voltage converters.
ii- Generation of PTM.
iii- PAM demodulator.

3-(a) Discuss the principle of IF choice in radio receivers.

(b) Show how to determine the low cut off frequency and the B.W of an amplifier using square wave testing.

4-(a) Discuss in details the image frequencies in radio receivers.

(b)Temperature is to be measured in the range of 250 °C to 450 °C with an accuracy of ± 2 °C. The sensor is a resistance that varies linearly from 280Ω to 1060Ω for this temperature range. Power dissipated in the sensor must be kept bellow 5 mW. Develop an analog conditioning that provides a voltage varying linearly from -5 to +5 volts for this temperature range.

Good Luck

Course Name: Selected course (4)
Course Code:
Level : 4th year Computer & Control
Department: Electronic and Comm.
Term No. : First

Zagazig university
Faculty of Engineering

Final Term Exam
Date : 11/1/2009
Time : 3 h
No. of pages : 1
No. of Questions: 5

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ii- At source frequency that is twice the cut off frequency determine the propagation constant for this mode, the wave length, the phase velocity and the intrinsic wave impedance.

(b) Derive an expression for Z_0 and γ for a low-loss T.L.

GOODLUCK (16 degrees)

Zagazig University
Faculty of Engineering
Elect. Power & Machine Dept.

Elect. Machines (3)
4th Year
Time: 3 hrs

1-A dynamometer instrument has one stationary coil and one moving coil. The moving coil is mounted within the stationary coil and is free to rotate about a common diameter of the two coils. The self and mutual inductances of the coils are $L_{11} = 0.01$H, $L_{22}=0.004$H and $L_{12}=0.003 \cos\theta$ where θ is the angle between the axes of the two coils.

(a) Suppose the two coils are connected in series so that the instrument is a dynamometer ammeter. Assuming that an alternate current of 0.5 A rms is passed through the coils, determine the average value of torque between them as a function of angle θ.

(b) Suppose the helical restraining spring on the moving coil is adjusted to give a rest position for zero current at $\theta=90$. What should the spring constant be if a full-scale deflection of 60 ° is to occur with a current of 0.5A?

(c) What current is required to produce half-scale deflection?

2-A reluctance motor has a magnetic path whose reluctance can be approximately expressed as, $R= 5.06\times10^4(2.5+1.5 \cos 2\theta)$ A/Wb

The coil has 15 turns of negligible resistance. If a sinusoidal potential difference of 110V rms at 60 Hz is applied to the coil terminals.

(a) What is the magnetic flux in the machine?

(b) At what angular velocity of rotation does the machine develop an average unidirectional torque?

(c) What is the maximum value of average torque that this motor can produce?

(d) What is the mechanical power output in part (c)?

3-A salient pole synchronous generator with saturated synchronous impedances Xd=1.85 per unit and Xq=1.65 per unit is connected to an infinite bus through an external reactance Xe=0.15 per unit. The generator is supplying its rated power, unity power factor, as measured at the generator terminals.

(a) Draw a phasor diagram indicating the bus voltage, the armature current, the generator terminal voltage, the excitation voltage and the rotor angle.

(b) Calculate the rotor angle in degree.

(c) Calculate the per unit terminal and excitation voltage.

(d) Calculate the per centage voltage regulation.

4-A 6000-hp three-phase synchronous motor running at 3600 rpm is used to drive a fan. The armature winding has a negligible resistance and a leakage reactance of 0.5 ohm. The operating voltage is 2400 volts. The open circuit characteristic is given by;

Field amp. A =	50	75	100	125	150	175	200	225	250	300
Terminal voltage KV=	0.76	1.13	1.50	1.84	2.14	2.44	2.65	2.86	3.04	3.32

Two points on the zero-power-factor characteristic for 1500 A having the following coordinates: terminal voltage=0, field current=167 and terminal voltage=2400, field current=345 A.

The fan is adjusted so that the motor delivers 80% of its rated output.

Calculate the field current if the motor is to operate at 0.8 p.f lagging, unity p.f and 0.8 p.f leading. Assuming the motor efficiency is 92%.

5-An industrial plant having a rating of 1500 KVA at a p.f of 0.7 lagging. If an induction motor is added to the plant having an efficiency of 90% and operates at a power factor of 0.8. What rating of a synchronous condenser should be added to the plant such that the plant will have the same rating of 1500 KVA? Neglect synchronous condenser losses.

Zagazig Uni. | **Satellite Communication Systems**
Faculty of Eng. | **Elective Course(5)** | **Final Exam:May 2008**
Date:14/5/2008 | **4th year-Communication Dept.** | **Time allowed:3 H**
Code number:ECE438

Answer all questions :

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   ii- Multiple access formats.
   iii- Selectivity of satellite frequency bands.
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   (c)Draw the satellite-earth angles, and then prove that:

$$\Phi_E = \{\text{Cos}^{-1} [r_E \cos \Phi_b / (r_E+h)]\} - \Phi_t$$

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2- (a) What are the advantages and disadvantages of GEO orbit?
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   (b)In a satellite communication system, the satellite has an elenation angle of 10° with height of 1200 km and a planner angle beamwidth of 57°.
   Calculate:
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3- (a) Explain with drawing Kepler's third law and then show the effects of a nonspherical earth and the oblatness of the earth.
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   (c)A satellite has the following parameters specified:
   Perigee hight 200 km, apogee hight 350 km, inclination 66.7°. Calculate:
   i-The semimajor axis.
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(12Mark)

With my best wishes
Dr.M.Fouad

Zagazig Uni. **Satellite Communication Systems**
Faculty of Eng. **Elective Course(5)** **Final Exam:May 2008**
Date:14/5/2008 **4th year-Communication Dept.** **Time allowed:3 H**
Code number:ECE438

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(12Mark)

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Discrete Transfer Functions for Dead-Time, First-Order, and Second-Order Processes

DEFINING EQUATION	TRANSFER FUNCTION, y_n/x_n SAMPLE TIME = T
1. $y(t) = Kx(t - D)$	KB^d where $d = D/T$ (an integer)
2. $\dfrac{dy(t)}{dt} = Kx(t)$	$\dfrac{KTB}{1 - B}$
3. $\tau\dfrac{dy(t)}{dt} + y(t) = Kx(t)$	$\dfrac{K(1 - e^{-T/\tau})B}{1 - e^{-T/\tau}B}$
4. $\dfrac{d^2y(t)}{dt^2} = Kx(t)$	$\dfrac{\frac{KT^2}{2}B(1 + B)}{(1 - B)^2}$
5. $\tau\dfrac{d^2y(t)}{dt^2} + \dfrac{dy(t)}{dt} = Kx(t)$	$\dfrac{K(b_1B + b_2B^2)}{1 - a_1B - a_2B^2}$ where $a_1 = 1 + e^{-T/\tau}$, $a_2 = -e^{-T/\tau}$, $b_1 = [T - \tau(1 - e^{-T/\tau})]$, $b_2 = -[Te^{-T/\tau} - \tau(1 - e^{-T/\tau})]$
6. $\dfrac{1}{\omega_n^2}\dfrac{d^2y(t)}{dt^2} + \dfrac{2\zeta}{\omega_n}\dfrac{dy(t)}{dt} + y(t) = Kx(t)$	$\dfrac{K(b_1B + b_2B^2)}{1 - a_1B - a_2B^2}$
$\tau_1\tau_2\dfrac{d^2y}{dt^2} + (\tau_1 + \tau_2)\dfrac{dy(t)}{dt} + y(t) = Kx(t)$	a. Overdamped: $\zeta > 1$

$$a_1 = e^{-T/\tau_1} + e^{-T/\tau_2}$$

$$a_2 = -e^{-(1/\tau_1 + 1/\tau_2)T}$$

$$b_1 = 1 + \frac{\frac{1}{\tau_2}e^{-T/\tau_1} - \frac{1}{\tau_1}e^{-T/\tau_2}}{\frac{1}{\tau_1} - \frac{1}{\tau_2}}$$

$$b_2 = e^{-(1/\tau_1 + 1/\tau_2)T} + \frac{\frac{1}{\tau_2}e^{-T/\tau_2} - \frac{1}{\tau_1}e^{-T/\tau_1}}{\frac{1}{\tau_1} - \frac{1}{\tau_2}}$$

b. Critically Damped: $\zeta = 1$

$$a_1 = 2e^{-\omega_n T}$$

$$a_2 = -e^{-2\omega_n T}$$

$$b_1 = 1 - e^{-\omega_n T} - \omega_n T e^{-\omega_n T}$$

$$b_2 = e^{-\omega_n T}(e^{-\omega_n T} + \omega_n T - 1)$$

c. Underdamped: $\zeta < 1$

$$\omega_d = \omega_n\sqrt{1 - \zeta^2}$$

$$a_1 = 2e^{-\zeta\omega_n T}\cos\omega_d T$$

$$a_2 = -e^{-2\zeta\omega_n T}$$

$$b_1 = 1 - \frac{\zeta\omega_n}{\omega_d}e^{-\zeta\omega_n T}\sin\omega_d T - e^{-\zeta\omega_n T}\cos\omega_d T$$

$$b_2 = e^{-\zeta\omega_n T}\left(e^{-\zeta\omega_n T} + \frac{\zeta\omega_n}{\omega_d}\sin\omega_d T - \cos\omega_d T\right)$$

Course Name : Measurements and testing(1)
Course Code :
Level : 4th year Comm.
Department : Comm.&Electr.
Term No : 1

Zagazig University
Faculty of Engineering

Final Term Exam
Date : 6/1/2008
Time : 120 min
No. of pages : 1
No. of Questions : 4

Attempt all questions: **Assume any missing data**

1-(a) Show how to measure concentration of flow gasses.
(b) Draw and discuss a principle diagram of measuring system and discuss different techniques for obtaining the mathematical model of measuring system.

2-(a) Discuss the principle of calometery, nephelometry and turbidometry for measuring characteristic of medium.
(b) Write notes on: i- Frequency to voltage converters.
ii- Generation of PTM.
iii- PAM demodulator.

3-(a) Discuss the principle of IF choice in radio receivers.
(b) Show how to determine the low cut off frequency and the B.W of an amplifier using square wave testing.

4-(a) Discuss in details the image frequencies in radio receivers.
(b)Temperature is to be measured in the range of 250 °C to 450 °C with an accuracy of ± 2 °C. The sensor is a resistance that varies linearly from 280Ω to 1060Ω for this temperature range. Power dissipated in the sensor must be kept bellow 5 mW. Develop an analog conditioning that provides a voltage varying linearly from -5 to +5 volts for this temperature range.

Good Luck

Zagazig University
Faculty of Engineering
Electronics and Comm. Dept.
4th, Year, Electronics and Comm.

خطة قديمة
(هندسة خاسبات-٢)
Final Exam.

(Jan., 21/ 2009)
(T. allowed : 3hrs)

Solve FIVE Questions ONLY of the following

Q1-Answer TWO items of the following :
(i)-Write down an algorithm for the multiplication process of the unsigned numbers in computers – give an example .
(ii)-How the negative real numbers are represented in computers .
(iii)-How shift registers are used in the addition of the binary numbers .

Q2- Consider a JK' flip-flop with an inverter between the external input K' and the internal input K .
(i)- Write down the flip-flop characteristic table .
(ii)- Explain how this flip-flop is used as a memory element, which can Store / Delete a binary bit (0 or 1) of information .
(iii)- Show that tying the two external inputs together forms a D flip-flop.

Q3-Write short notes on the following :
(i) - The basic composition of the computer system .
(ii)- The interface circuits functions and its importance .
(iii)- Read Only Memory (ROM) and Read/Write (R/W) memories .

Q4-Write short notes on THREE items of the following :
(i)- The requirements from the µprocessor in executing an instruction .
(ii)- Instruction cycle state diagram – with interrupt .
(iii)- The instruction cycle with nested interrupt
(iv)- The Uni-Bus and Multi-Bus systems .

Q5- Answer the following :
(i)- Define the difference between the synchronous, asynchronous, interrupt, and direct memory accessing – from your point of view .
Explain one of the above methods of data transfer to / from computer .
(ii)- Describe and draw a schematic diagram for a synchronous data transfer process between external devices and the processor.
(iii)-Describe the software polling processes – of the interrupt data transfer .

Q6-Write short notes on THREE items of the following :
(i)- Batch processing,
(ii) Operating System Functions , and its position in the computer system .
(iii)-Uniprogramming and Multiprogramming .
(iv)- Large scale computers and symmetric multiprocessors .

.....Best Wishes for Success.

Course Name: مادة الاختبار عن
Course Code:
Level : 4th year
Department: Electronics&Comm.
Term No. : 1

Zagazig Univ.
Faculty of Eng.

Final Term Exam
Date January/ 2009
Time : 3hrs
No. of pages : 1 page
No. of Questions: 2

Answer the following "الاجابة المنظمة لها اعتبار خاص" "زمن هذا الجزء ساعة ونصف"
Part one:
Q#1 **(50 points)**

A)- Write a short note on: **(25 points)**
Circuit switching – Packet switching- The main component of the computer network- Network classifications- Inter-layer communication of OSI networks- WLAN Types. (10 points)

B)- Define the following:
PDU- Primitives- Protocols- Standards- channel capacity – Channel impairments. (5 points)

C) Explain the function of each layer of OSI-RM and why layering. (10 points)

Q#2 **(25 points)**

Explain the TCP/IP protocol and explain the function of each layer. (7 points)

B)- Discuss the principles and the advantages of spread spectrum technique. (4 points)

C)- Suppose that a signal has a power of 10 W at the transmitter wit carrier frequency of 300KHz. IF the receiver is at a distance of 200 meters what will be the power received if:
i- the attenuation is 1dB . Assume that the attenuation in dB increases linearly with the distance
ii- the attenuation is proportional to the square of the distance. (7 points)

D)- Consider the network shown in Figure 2-d . A 9000 bit file is to be transferred from node A to node E. suppose that the time to setup for CS and VS is 5 sec each and it takes 1 second for 1000 bit data packet to be transmitted fro one node to another. For VC and datagram, the file is broken into 1000bit data packets, with 900 bits of file data and 100 bits of protocol overhead. Compare the total delay for transferring the file from A to E. For datagram , assume that node A sends packets alternatively through B and C (Assume no propagation time) . (7 points)

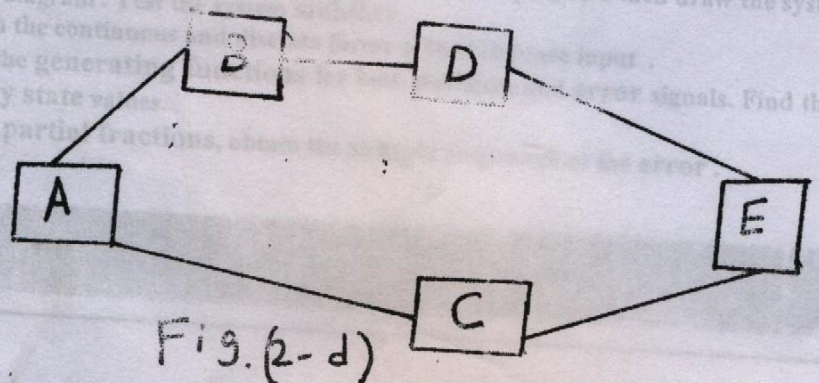

Fig.(2-d)

جامعة الزقازيق
كلية الهندسة
الفرقة الرابعة
اتصالات وحاسبات وقوى كهربية

امتحان
مقرر الإنسانيات

امتحان نهاية الفصل الدراسى الأول
العام الجامعى ٢٠٠٨/٢٠٠٩
الزمن : ساعتان

أجب عن الأسئلة الآتية :

السؤال الأول : (٧ درجات)

(أ) إشرح مستخدماً التحليل البيانى " منحنى إمكانيات الإنتاج " وكيفية الاستدلال به .
(ب) وضح دالة الطلب فى صيغتها الرياضية موضحاً الفرق بين الكمية المطلوبة ومنحنى الطلب .

السؤال الثانى : (٨ درجات)

(أ) " تعتبر نقطة التوازن فى سوق أى سلعة هى المحصلة الأساسية لتفاعل قوتى السوق "
وضح هاتين القوتين ومحدداتهما وآلية إيجاد التوازن بيانياً وجبرياً .
(ب) إشرح بإيجاز (مستخدماً التحليل البيانى ما أمكن)
منحنى عرض العمل المرتد – الأجر التوازنى

السؤال الثالث :

(أ) إذا علمت أن دالة الإنتاج لسلعة معينة هى : (١٠ درجات)

$$Q_p = 4\,Q_e - 0.06\,Q^2_e$$

ودالة العرض هى $S = 20 + 5\,P$
ودالة الطلب $D = 80 - 10P$
حيث : Q_p = كمية الإنتاج ، Q_e = الكمية التوازنية ، S = كمية العرض ، D = كمية الطلب ، P = سعر السلعة
أوجد = السعر التوازنى – الكميةى التوازنية – كمية الإنتاج

(ب) صحح العبارات التالية من كان هذا التصحيح مطلوباً (١٠ درجات) .

١- فى سوق العمل يمثل المنتجون ومنظمات الأعمال جانب العرض .
٢- المرونة الدخلية للطلب هى درجة استجابة كمية الطلب للتغيرات التى تحدث فى سعرها .
٣- عند إرتفاع دخول المستهلكين يتحرك منحنى الطلب إلى جهة اليسار ولأسفل .
٤- عند زيادة الطلب على السلعة وزيادة العرض منها بنفس المعدل تنتقل نقطة توازن السوق دون تغير الكمية التوازنية .
٥- إذا كانت القيمة المطلقة لمعامل مرونة الطلب أكبر من ١ فإن زيادة سعر السلعة تؤدى إلى زيادة اكبر فى حجم الطلب عليها .
٦- سلعة الوقود بالنسبة لسلعة السيارات هى سلعة (وسيطة – رأسمالية – بديلة)
٧- العلاقة بين الطلب على العمل وكل من (عدد السكان - عدد المنتجين – مستوى التقنية) هى عكسية.

مع أطيب التمنيات بالتوفيق

Department: Electronic and Comm.
Term No. : First

Zagazig University
Faculty of Engineering

Date : 11/1/2009
Time : 3 h
No. of pages : 1
No. of Questions: 5

Assume any missing data

Attempt all questions:

1-(a) From the first principles of transmission line, derive the equations of current and voltage along the line.

(b) A transmission line has a characteristic impedance of 75 + j 0.01 ohm, and load impedance of 70 + j 50 ohm. Calculate the reflection and transmssion coefficients.

(11 degrees)

2-(a) Use the smith chart to find the input impedance of a section of a 50 ohm loss-less T.L. that is (.1) long and is terminated in a short circuit.

(b) Starting from the voltage and current equations for a long T.L.

$$V = V_{in} \cosh \gamma l - I_{in} Z_0 \sinh \gamma l$$

$$I = (V_{in} / Z_0) \sinh \gamma l$$

i- Determine an expression for the input impedance in terms of the characteristic impedance, the load impedance and Z_{oc} (the input impedance when Z_L is replaced by an open circuit).

ii- If $Z_0 = 70$ ohm, $Z_L = 100 \angle 45^\circ$, $Z_{oc} = 100 \angle -45^\circ$ and Vin = 100 Volts (rms). Find the power input to the transmission line.

(18 degrees)

3- A transmission line is terminated by a normalized load $\overline{Z_L} = 2$

i- Use a single stub tuner to match this load to the line at frequency f_1 and wave length λ_1.

ii- If the wave length is now increased by 10%, what is the new value of stub susceptance and voltage standing wave ratio (VSWR) on the line.

(13 degrees)

4-(a) A 50 ohm line is connected to a load of 30 + j 60 ohm. Find two possible locations from yhr load where a single shunt stub could be used for matching, and the length of each required such stub. Assume Z_0 of the stub is 50 ohm.

(b) Write notes on the basic TEM parameters of microstrip line.

(12 degrees)

5- (a) A common air filled rectangular waveguide has a = 0.8 inch and b = 0.4 inch:

i- Find the cut off frequency for the lowest order non trivial TM-mode.

ii- At source frequency that is twice the cut off frequency determine the propagation constant for this mode, the wave length, the phase velocity and the intrinsic wave impedance.

(b) Derive an expression for Z_0 and γ for a low-loss T.L.

GOOD LUCK (16 degrees)

Course Name: Measurements and testing (1)
Course Code:
Level : 4th year
Department: Electronic and Comm.
Term No. : 1

Zagazig University
Faculty of Engineering

Final Term Exam
Date : 14/1/2009
Time : 2h
No. of pages :1
No. of Questions: 4

Assume any missing datas.

Attempt all questions:

1-(a) Discuss how to measure cocentration (composition) of solid materials.

(b) Explain the principles of process measurements by the following techniques:

i- Calorometry.

ii- Spectrometry.

iii- Ultrasonic.

(10 degrees)

2- Discuss the following:

i- recent technique for measuring characteristics of flow gasses (composition of gases).

ii- Different techniques for measuring non electrical values with electrical values.

(10 degrees)

3-(a) Write notes on:

i- PAM modulator.

ii- successive approximation A/D converter.

iii- Voltage to frequency conveter.

vi- Natural and flat top sampling.

(b) Show how to:

i- Demodulate FSK signal.

ii- Improve selectivity in radio receivers.

(10 degrees)

4- Show in details :

i- IF choice and images in radio receivers.

ii- A dual conversion superhytrodyne system.

(10 degrees)

Good Luck

Zagazig University
Faculty of Engineering
Elect. Power & Machine Dept.

Elect. Machines (3)
4th Year
Time: 3 hrs

1-A dynamometer instrument has one stationary coil and one moving coil. The moving coil is mounted within the stationary coil and is free to rotate about a common diameter of the two coils. The self and mutual inductances of the coils are $L_{11} = 0.01$H, $L_{22}=0.004$H and $L_{12}=0.003 \cos\theta$ where θ is the angle between the axes of the two coils.

(a) Suppose the two coils are connected in series so that the instrument is a dynamometer ammeter. Assuming that an alternate current of 0.5 A rms is passed through the coils, determine the average value of torque between them as a function of angle θ.

(b) Suppose the helical restraining spring on the moving coil is adjusted to give a rest position for zero current at $\theta=90$. What should the spring constant be if a full-scale deflection of 60 ° is to occur with a current of 0.5A?

(c) What current is required to produce half-scale deflection?

2-A reluctance motor has a magnetic path whose reluctance can be approximately expressed as, $R= 5.06\times10^4(2.5+1.5 \cos2\theta)$ A/Wb
The coil has 15 turns of negligible resistance. If a sinusoidal potential difference of 110V rms at 60 Hz is applied to the coil terminals.

(a) What is the magnetic flux in the machine?

(b) At what angular velocity of rotation does the machine develop an average unidirectional torque?

(c) What is the maximum value of average torque that this motor can produce?

(d) What is the mechanical power output in part (c)?

3-A salient pole synchronous generator with saturated synchronous impedances Xd=1.85 per unit and Xq=1.65 per unit is connected to an infinite bus through an external reactance Xe=0.15 per unit. The generator is supplying its rated power, unity power factor, as measured at the generator terminals.

(a) Draw a phasor diagram indicating the bus voltage, the armature current, the generator terminal voltage, the excitation voltage and the rotor angle.

(b) Calculate the rotor angle in degree.

(c) Calculate the per unit terminal and excitation voltage.

(d) Calculate the per centage voltage regulation.

4-A 6000-hp three-phase synchronous motor running at 3600 rpm is used to drive a fan. The armature winding has a negligible resistance and a leakage reactance of 0.5 ohm. The operating voltage is 2400 volts. The open circuit characteristic is given by;

Field amp. A =	50	75	100	125	150	175	200	225	250	300
Terminal voltage KV=	0.76	1.13	1.50	1.84	2.14	2.44	2.65	2.86	3.04	3.32

Two points on the zero-power-factor characteristic for 1500 A having the following coordinates: terminal voltage=0, field current=167 and terminal voltage=2400, field current=345 A.
The fan is adjusted so that the motor delivers 80% of its rated output.
Calculate the field current if the motor is to operate at 0.8 p.f lagging, unity p.f and 0.8 p.f leading. Assuming the motor efficiency is 92%.

5-An industrial plant having a rating of 1500 KVA at a p.f of 0.7 lagging. If an induction motor is added to the plant having an efficiency of 90% and operates at a power factor of 0.8. What rating of a synchronous condenser should be added to the plant such that the plant will have the same rating of 1500 KVA? Neglect synchronous condenser losses.

Zagazig Uni.
Faculty of Eng.
Date:14/5/2008

Elective Course(5)
4th year-Communication Dept.
Code number:ECE438

Satellite Communication Systems
Final Exam:May 2008
Time allowed:3 H

Answer all questions :

1. (a)Write short notes about:
   i-Ringaround.
   ii- Multiple access formats.
   iii- Selectivity of satellite frequency bands.
   (b)Explain with drawing the block diagram of the transmitting and receiving earth station, and what is the category of earth stations?
   (c)Draw the satellite-earth angles, and then prove that:

$$\Phi_E = \{\text{Cos}^{-1} [r_E \cos \Phi_b / (r_E+h)]\} - \Phi_t$$

(12Mark)

2- (a) What are the advantages and disadvantages of GEO orbit?
   (b)Explain with drawing:
   i-Satellite launching.
   ii-RF front end.
   iii-Forms of satellite systems.
   (b)In a satellite communication system, the satellite has an elenation angle of 10° with height of 1200 km and a planner angle beamwidth of 57°.
   Calculate:
   i)Coverage area.
   ii)Slant range.
   iii)Propagation time.
   iv)Time period that taken by the satellite to pass over a point on the earth for prograde and retrograde orbit.

(11Mark)

- (a) Explain with drawing Kepler's third law and then show the effects of a nonspherical earth and the oblatness of the earth.
  (b)Draw the earth-orbiting satellite, and then define; Apogee,Inclination and prograde and retrograde orbits.
  (c)A satellite has the following parameters specified:
  Perigee hight 200 km, apogee hight 350 km, inclination 66.7°. Calculate:
  i-The semimajor axis.
  ii-The eccentricity.
  iii-The nominal mean motion and the mean motion.
  iv-The rate of regression of the nodes.

(12Mark)

With my best wishes
Dr.M.Fouad

Zagazig Uni.
Faculty of Eng.
Date:14/5/2008

Elective Course(5)
4th year-Communication Dept.
Code number:ECE438

Satellite Communication Systems
Final Exam:May 2008
Time allowed:3 H

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(11Mark)

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   Perigee hight 200 km, apogee hight 350 km, inclination 66.7°. Calculate:
   i-The semimajor axis.
   ii-The eccentricity.
   iii-The nominal mean motion and the mean motion.
   iv-The rate of regression of the nodes.

(12Mark)

With my best wishes
Dr.M.Fouad

Course Name : Measurements and testing(1)		Final Term Exam	
Course Code :		Date	: 6/1/2008
Level : 4th year Comm.	Zagazig University	Time	: 120 min
Department : Comm.&Electr.	Faculty of Engineering	No. of pages	: 1
Term No : 1		No. of Questions	: 4

Assume any missing data

Attempt all questions:

1-(a) Show how to measure concentration of flow gasses.

(b) Draw and discuss a principle diagram of measuring system and discuss different techniques for obtaining the mathematical model of measuring system.

2-(a) Discuss the principle of calometery, nephelometry and turbidometry for measuring characteristic of medium.

(b) Write notes on: i- Frequency to voltage converters.
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(b) Temperature is to be measured in the range of 250 °C to 450 °C with an accuracy of ± 2 °C. The sensor is a resistance that varies linearly from 280Ω to 1060Ω for this temperature range. Power dissipated in the sensor must be kept bellow 5 mW. Develop an analog conditioning that provides a voltage varying linearly from -5 to +5 volts for this temperature range.

Good Luck

Al-Zagazig University
Faculty of Engineering ,
Electrical Eng. Depart. ,

Electrical machines(3).
Time allowed: 3 hours.
Final Term Exam,Jan.2009

Please answer the following questions:

(1)- A 12 pole, 3-phase, 60 Hz alternator has 72 slots, The flux per pole is 0.0494 Wb. For a single layer winding calculate:
(a)- The terminal e.m.f., when wound with a star connected, full pitch three winding having 10 conductors per slot.
(b)- The terminal e.m.f. in (a) if the coil span is reduced to 2/3 pole pitch. What harmonics are completely eliminated from the output voltage in this case?
(c)- The required flux per pole if wound as a single phase alternator to produce a terminal e.m.f. of 2200 V, two thirds only of the slots being wound with 8 conductors per slot and full pitch coils.
[20 degree]

(2)- A 4-pole, 208 -V, 5 KVA, 60 Hz, Y-connected alternator has a per-phase synchronous reactance of 8.0 Ω at rated terminal voltage.
(a)-Determine the excitation voltage and the power angle at 0.8 PF lagging and rated KVA.
(b)- Determine the stator current, power factor and reactive power supplied by the machine, if the excitation current is increased by 20% at the same govern point.
(c)- If the prime mover power is slowly increased, What would be the steady state stability limit ?
(d)- What are the corresponding values of stator current, power factor, and reactive power?
[20 degree]

(3)- Two identical 2MVA alternators operate in parallel, the governors of 1st machine is such that the frequency drops uniformly from 50 Hz on no load to 48 Hz on full load. The corresponding uniform frequency drop of the 2nd machine is from 50 Hz on no load to 47.5 Hz on full load.
(a)- How will the two machines share a load of 3 MW.
(b)- What is the maximum load at unity pf without over loading either machine.
[20 degree]

(4)- A 3 phase,280V, 60 Hz, Δ- connected synchronous motor has a per-phase synchronous reactance of 4.0 Ω at rated terminal voltage. Its friction and windage losses are 2.5 KW and Its core losses are 2.25 KW. The motor is loaded by 20 hp at 0.8 leading power factor.
(a)- Find the supply current, armature current, power factor and excitation voltage. draw the motor phasor diagram.
(b)- If the load is increased to 75 hp. Calculate the supply current, armature current, power factor and excitation voltage . draw the motor new phasor diagram.
(c)- For part (a) , if the motor flux is decreased by 25 % . Calculate the supply current, armature current, power factor and excitation voltage . draw the motor new phasor diagram.
[20 degree]

(5)-(a)- Derive the average value of the electromagnetic torque for a single phase reluctance motor.
(b)- A single phase reluctance motor hasa winding of 2000 turns and is excited by the source $v_{st} = 220 \sin 377t$. The reluctance of the magnetic circuit is $\mathcal{R}_d = 1.5 \times 10^6$ and $\dot{\mathcal{R}}_q = 2.5 \times 10^6$.
(i)- Calculate the maximum average torque.
(ii)- Write the general expression for the average torque.
(ii)- Calculate the torque at $\delta = 15°$.

[20 degree]