ارهالان جديد

Tanta University
Faculty of Engineering
Electronics & Comm. Eng. Dept.

Final Exam – 2h
Technical Reports- 2nd Year
(Jan 2009)

Answer the following Questions:

Question (1)

(a) Write a short note about basic forms of style in technical writing.

(b). Write a paragraph describing what you think is the most significant problems in your department.

Question (2)

(a) " Ethics is a significant factor in three main areas in technical communications", Explain in details each of these areas .

(a) Create a checklist for the following types of documents:
(i) Internal and External Proposals
(ii) Progress reports
(iii) An experimental report

Question (3)

(a) Describe common types of graphs and charts you may use in technical reports showing when and where each should be used.

(b) Explain with drawing flowcharts illustrating a project completion cycle in technical report.

Good Luck.....

جامعة طنطا
كلية الهندسة
قسم الفيزيقا والرياضيات الهندسية

المـــــــــادة : رياضيات هندسية (٣) أ
الزمـــــــن :٣ساعات
الفرقـــــــة : الثانية (إتصالات + قوى كهربية)
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) Compute numerically the first two rows of the solution of the wave equation

$\frac{\partial^2 u}{\partial t^2} = 4\frac{\partial^2 u}{\partial x^2}$, $0 \le x \le 1$, $t \ge 0$, take $h = 0.2, k = 0.05$

with the boundary and initial conditions

$u(0,t) = u(1,t) = 0$

$u(x,0) = \sin \pi x$, $\frac{\partial u}{\partial t}(x,0) = 0$

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

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

Tanta University
Faculty of Engineering
Time : 3 Hours.

Electronics & Comm. Eng. Dept.
Electronic Measurement Systems
Final Exam (Jan. 2009).

Answer the following Questions:

1. (a) Explain the construction, principle of working and applications of Hall Effect transducers.

(b) A capacitive transducer uses two plates of area 750 mm^2 separated by a distance of 3.5 mm. A pressure of 900 kN/m^2 when applied to the top plate produces a deflection of 0.6 mm. The capacitance is 370 pF when no pressure is applied to the plates. Find the value of capacitance after the application of a pressure of 900 kN/m^2 (The permittivity of air is 8.85×10^{-12} F/m).

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2. (a) Explain the construction, principle of working and applications of liquid level sensing circuit with TTL outputs

(b) A voltmeter having a sensitivity of 1.5 kΩ /volt reads 80 V on its 150 V range, when connected across an unknown resistor in series with a milliammeter . If the ammeter reads 15 mA. Calculate:
(i) Actual resistance of unknown resistor
(ii) Error due to loading effect of voltmeter. (iii) Percentage relative accuracy.

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3. (a) Explain the origin of ground loops. Sketch a circuit model for effect of ground loop noise and suggest several methods for removing the effect of the common-mode noise voltage source

(b) A temperature alarm unit with a time constant of 120 s is subjected to a sudden rise of temperature of 60°C because of fire .If an increase of 40°C is required to actuate the alarm , what will be the delay in sudden temperature increase .

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4. (a) Draw the block diagram of a chopper type dc amplifier and explain the function of each block. What are the advantages of chopper type voltmeter over the other voltmeters.

(b) The symmetrical square wave shown in Fig.1 is applied to the average responding voltmeter .The scale is calibrated in terms of the r.m.s value of purely sinusoidal waveform. Calculate the form factor of square wave and the error in the meter reading.

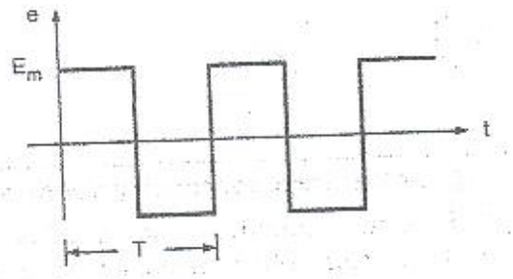

Fig.1

TANTA UNIVERSITY

Faculty of Engineering

Power Engineering and Electrical Machines Department

Course	: Electromagnetic Fields	Exam	: Final
Code	: EPM2142	Time	: 3 Hours
Year	: 2nd	Department.	: Electronics and & Communications
Date	: 21 / 1 / 2009		

ANSWER ALL QUESTIONS

Question(1) *(18 Marks, a) = 6 Marks and b) = 12 Marks)*

a) With full definitions of all terms used, write down the equations of:
   i) Lorentz force equation.
   ii) Maxwell's equations in its integral form.

b) In free space, a point charge Q_1= 10 nC is located at $P_1(0,4,0)$ and another point charge Q_2= 20 nC is located at $P_2(0,0,4)$.
   i) Find the electric field intensity at the origin.
   ii) Where should a point charge = 30 nC be located so that the electric field intensity at the origin equals zero.

Question(2) *(20 Marks, a) = 8 Marks and b) = 12 Marks)*

a) Derive an equation of the capacitance of two charged concentric spheres, the radius of the inner and outer spheres are a and b respectively. The inner sphere has a charge Q and the outer sphere has a charge – Q.

b) Given the potential field $V = 60\ x^2\ y\ z + 30\ y^2$ V in free space, evaluate at P(2,1,5):
   i) The magnitude and direction of the electric field intensity.
   ii) The electric flux density.
   iii) The absolute potential.
   iv) The volume charge density.

Question(3) *(24 Marks, a) = 10 Marks and b) = 14 Marks)*

a) Using Ampere's circuital law derive a mathematical expression for the magnetic field intensity H from $\rho = 0$ to $\rho = \infty$ of an infinitely long coaxial transmission line carrying a uniformly distributed total conductor current I in the inner solid conductor and – I in the outer hollow conductor, given that the inner solid conductor radius is h and the hollow outside conductor inner radius is b and its outer radius is c. Sketch H versus ρ from 0 to ∞.

b) Two spherical concentric conductors with the inner spherical conductor is solid and has radius a and its voltage is V_1. The outer spherical conductor has inner radius b and outer radius c and it has a voltage V_2. Find the charges Q_1 and Q_2 for the following conditions:
   i) The two conductors are isolated.
   ii) Inner conductor is grounded.
   iii) Outer conductor is grounded.
   iv) The inner conductor is not charged.

Question(4) *(23 Marks, a) = 6 Marks and b) = 17 Marks)*

a) Derive the self inductance per a unit length of an infinite length conductor having a radius h.

b) Calculate the force produced on a square loop (ABCD) carrying a current of 5 mA in z = 0 plane due to a current carrying conductor of 10 A placed in the y axis (z = 0 and x = 0), where the coordinates of the square loop are: A(1,1,0), B(4,1,0), C(4,5,0), and D(4,5,0).

دوائر الكترونية ١ جديد ٢٠١٠

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.

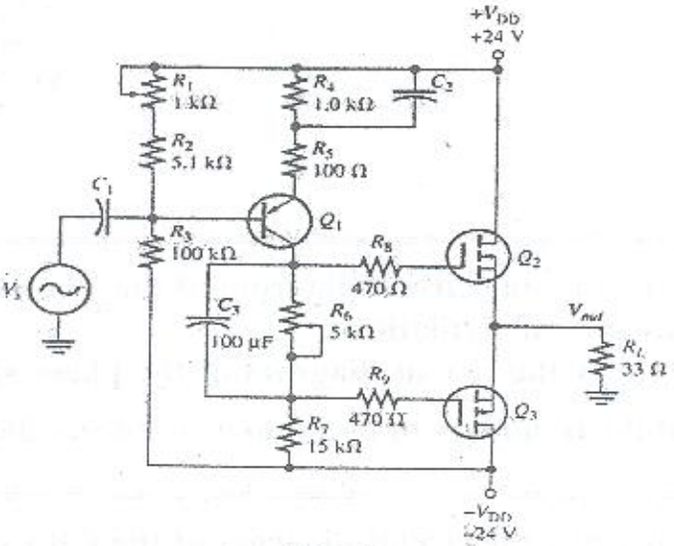

Fig. 1

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 resistance 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.

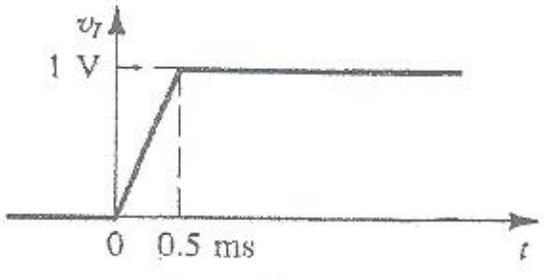

Fig. 2

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.

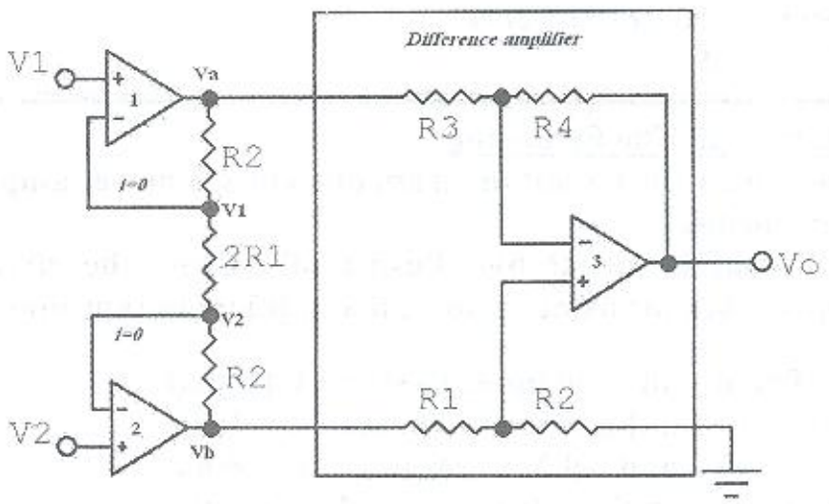

Fig. 3

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.

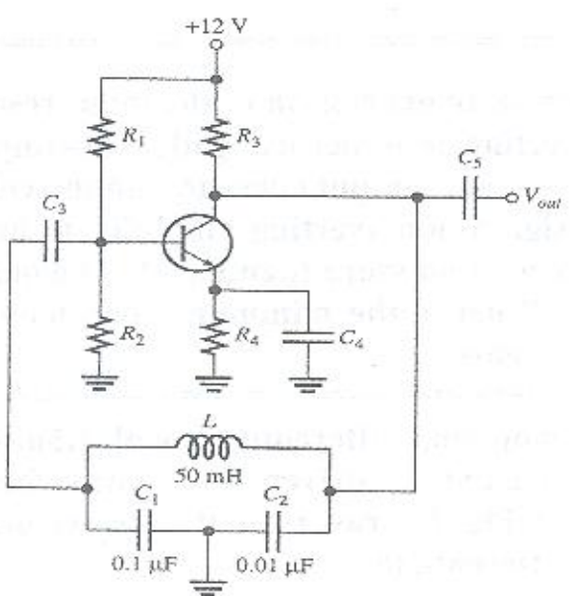

Fig. 4

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

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Tanta University
Faculty of Engineering
Dept. of electronics & electrical comm.

Communication Theory
Second year, 1st-term Exam.
Time allowed: 3 Hour

Answer the following questions:

1-Explain why;

a-Automatic retransmission could be used with Simplex Comm. systems.

b- Number of repeaters used with an optical cable is lower than that used with a coaxial cable with the same length.

c- Analogue comm. systems require lower band width than that required for Digital comm. systems.

2- Compare between;

a- Metallic wave guide and Coaxial cable,

b- Source coding and channel coding,

c- Negative peak clipping and diagonal clipping distortion,

d- Main difference between GSM system and Bluetooth system,

e- Modulation index and frequency deviation.

3- a- Draw the spectrum of the waveform described as;

$$V(t) = (\frac{2t}{T}+1) \qquad T/2 > t > -T/2$$

b- Calculate the signal power,

c- Obtain Fourier transform of; $\delta(t)\ \text{Cos}\ \omega t$, $f(\frac{t}{a})$.

4-A carrier signal with 32 watt is amplitude modulated by the signal;

$$V(t) = 5\ \text{Cos}\ 2\pi\ 500t \text{ Volts},$$

a- Write the equation of the modulated signal.

b- Show the effect of changing the frequency of the modulating signal to 3000 Hz, and draw its spectrum.

c- Calculate the power of the modulated signal, and comment.

5- A receiver picked up the signal; $V(t) = 10\ \text{Cos}\ [4\pi \times 10^6 t + 0.8\ \text{Sin}\ 3000\ \pi t]$

a- Draw its spectrum and determine the bandwidth when the modulating signal amplitude is 4 volt. Show the effect of changing it to 8 volt.