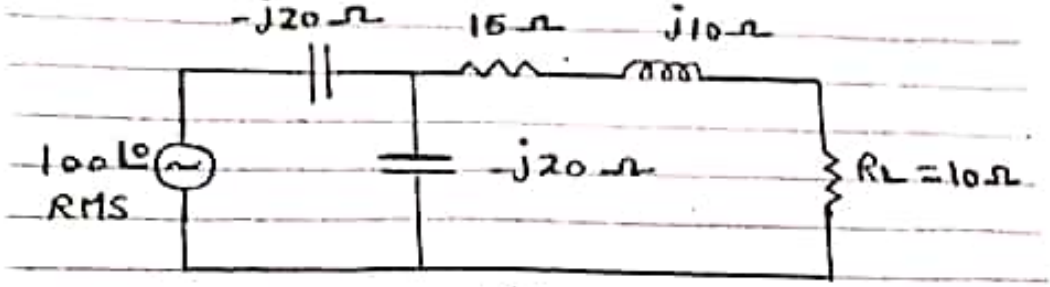


Fig. 1

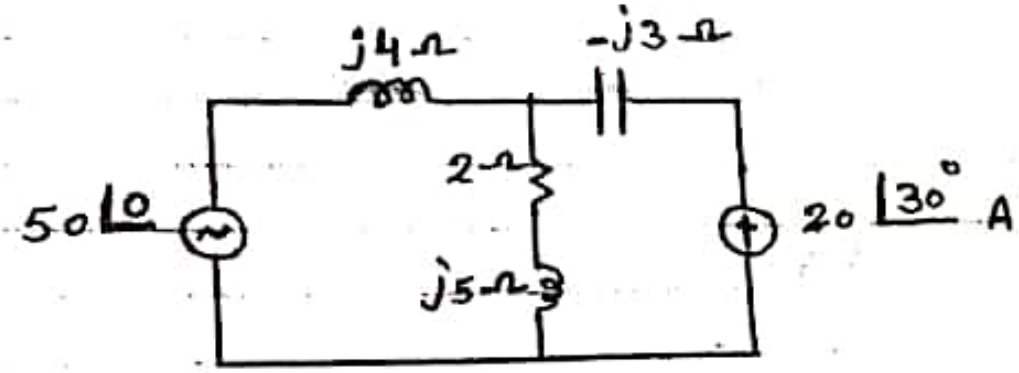


Fig. 2

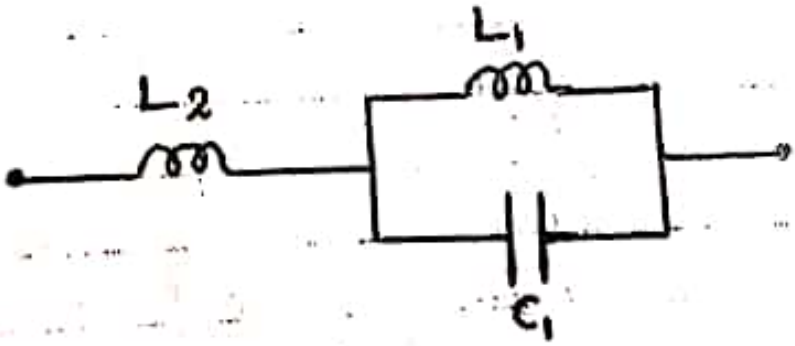


Fig. 3

MENOUFIA UNIVERSITY
FACULTY OF ELECTRONIC ENG.
SUBJECT : Electric Circuit Theory (Part 1)
TIME: 3 HOUR Jan.2017 2nd YEAR

Answer the following questions: (35 MARKS)

Q.1 A– Determine the circuit elements if the applied voltage to the circuit is:

$$V(t) = 100 \sin (50\,t + 30^\circ)$$

The true power in the circuit is 200 W and the power factor is 0.707 leading. Construct the phasor and impedance diagram.

B – For the circuit shown in Fig.1, calculate the power in the load of 10 Ω using Thevenin theorem.

Q.2 A – For the circuit shown in Fig.2. Determine the voltage across the impedance (2 + j 5) Ω .

B – The current and the voltage to a load are represented as:

$$e_T = 20 + 30 \sin (377\,t) + 50 \sin (1130\,t + 20^\circ)$$

$$i_T = 15 \sin (377t) + 14 \sin (1130\,t - 36^\circ)$$

Determine the following:

1 – The frequency of each component of the driving voltage.
2 – The rss voltage. 3 – The rss current.
4 – The active power drawn by the load.
5 – The apparent power. 6 – The power factor.
7 – The impedance offered by the load for each frequency.

Q.3 A – For the circuit shown in Fig.3. Determine:
a – Series resonance frequency.
b – Parallel resonance frequency.

B – A series RLC circuit has a quality factor of 5 at 50 rad/sec. The current flowing through the circuit at resonance is 10 A and the supply voltage is 100 V. The total impedance of the circuit is 20 Ω. Find the circuit elements (R, L, and C).

الفرقة الثانية

Communication Engineering Second Year Second Term Part I (25/3/2017)

Q1) Write Short account on : a) Optical communication systems, b) Wireless communication systems

Q2) Calculate the wavelength ranges of : a) Ultra high frequency, b) Infrared light

Q3) Compare between TDM and WDM

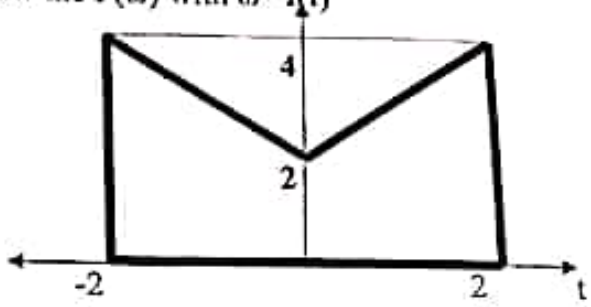
Q4) Express the function interms of a sum of sine functions and draw the amplitude spectrum and phase spectrum

$$x(t) = -A_0 + A_1\cos(\omega_1 t + \theta_1) - A_2\cos(\omega_2 t) - A_3\sin(\omega_3 t + \theta_3), \quad A_1 > 0$$

Q5) Find F.T of the function and draw the F(ω) with ω

$$f(t) = \begin{cases} A & -\frac{\tau}{2} \le t \le \frac{\tau}{2} \\ 0 & \text{otherwise} \end{cases}$$

Q6) Find F.T of Fig.1



Question No 2

(10 Marks)

2-A) Calculate the resonant frequency fr of a lead-lag circuit with the following values: C1 = C2 = C = 0.01 μF and R1 = R2 = R = 10.0 kΩ. Plot the phase response and the frequency response of the given lead- lag circuit. Then, shows to find the quality factor Q and the band width B.W. What is the rms output voltage if an input signal with a frequency equal to fr and with an rms value of 6.0 V is applied to the input of a lead-lag circuit?. In addition, show how the mentioned circuit can be used to have Wien bridge oscillator. Draw the oscillator output showing its frequency.

2-B) Draw and discuss in detail the phase shift oscillator showing how the phase condition for oscillations around the closed loop is satisfied.

Question No 3

(10 Marks)

3-A) Draw the internal diagram of the integrated circuit timer 555 and show in details how it can be used as astable mode oscillator. Draw the voltage across the external capacitor cext discussing in detail the values of its minimum and maximum & the output voltage of the oscillator. What are the equations of T_H,T_L, T, Duty cycle D and the output frequency fr .

3-B) Draw the block diagram of a phase-locked loop PLL. What is the basic function of a PLL?. What is the difference between the lock range and the capture range of a PLL?. Basically, show how a PLL can track the incoming frequency fi?. What are the basic conditions for PLL to acquire lock. If a frequency modulated FM signal is applied to the input of the PLL circuit using 565 I.C, what will be the PLL output. What will be the output of the VCO part of the PLL if a sinusoidal signal is applied to its input. No equations derivation are required.

Question No 4

(15 Marks)

4-A) Draw and analysis op-amp integrator circuit. Derive the relation between the output voltage V_o in terms of the input voltage V_{in} and circuit parameters. Then, draw an input voltage and the corresponding output voltage.

4-B) Compare between linear and logarithmic signal compression discussing who is better. Draw and discuss a circuit that work as logarithmic amplifier.

4-C) An input signal vi (t) is applied to R and C circuit that connected in series. V_{out} (t) is taken across the capacitor C. Find V_{out} (ω)/ V_i (ω) in general. Then, draw the frequency response of the given circuit showing the cutoff frequency fc. Also, derive a condition in terms of the values of the resistance and capacitance that force this circuit to works as an integrator for the input signal.

أستاذ المقرر: دكتور عادل شاكر الفيشاوي

University	:	Menoufia		Date	: 22/05/2017
Faculty	:	Electronic Engineering		Time	: 3 Hours
Department	:	ECE		No. of pages	: Two
Academic level	:	2nd Year		Full Mark	: 45 Marks
Course Name	:	Electronic Circuits		Exam	: Final Exam
Course Code	:	ECE 223		Examiner	: Dr: Adel El-Fishawy

Answer all the following four questions

Question No 1

1- The output of a particular op-amp increases 8 V in 12 μA due to a unit step input. The slew rate is (10 Marks)

(a) 96 V/ μS (b) 0.67 V/ μS (c) 1.5 V/ μS (d) none of these.

2- The output frequency of a certain voltage control oscillator VCO changes from 50 kHz to 65 kHz when the control voltage increases from 0.5V to 1 V. The conversion gain, K of the VCO equals to...

3- In an astable Timer 555 configuration, the external R_1 = 3.3 KΩ. What must R_2 equal to produce a duty cycle of 75 percent?.

4- Negative feedback

(a) increases the input and output impedances (b) increases the input impedance and the bandwidth (c) decreases the output impedance and the bandwidth (d) does not affect impedances or bandwidth.

5- When negative feedback is used, the gain-bandwidth product of an op-amp

(a) Increases (b) decreases (c) stays the same (d) fluctuates

6- Two IC op-amps are available to you. Their characteristics are listed below. Choose the one you think is more desirable. Op-amp 1: Z_{in} = 10 MΩ, Z_{out} = 75 Ω, A_{ol} = 150,000

Op-amp 2: Z_{in} = 5 MΩ, Z_{out} = 100Ω, A_{ol} = 50,000

7- A voltage-follower

(a) has a gain of 1 (b) is noninverting. (c) has zero feedback resistor d) has very high input impedance (e) has all of these.

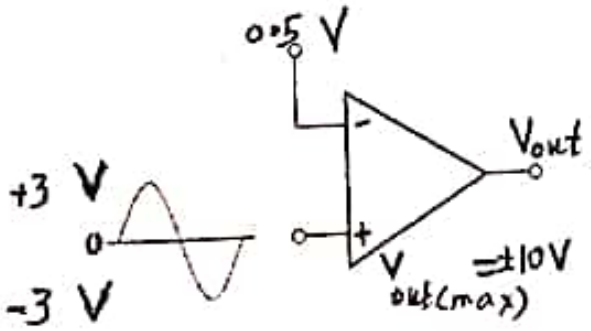
8- An averaging op- amp amplifier has ten inputs. The ratio Rf /Ri must be

a) 10 b) 0.2 c) 0.5 d) 0.1

9- The oscillator (function generator) should contain

a) a sinusoidal oscillator b) a differentiator c) an integrator d) a comparator e) zero level detector f) all of these g) a) , c) and e)

10- Draw the output voltage waveform for the circuit in the figure shown below with respect to the input.



ثانيه

كلية الهندسة التكنولوجية بمنوف
قسم : هندسة الالكترونيات و الاتصالات الكهربية
تاريخ الاختبار: الأحد ٢٠١٧/٣/٢٦
امتحان أعمال السنة الفصل الدراسي الثاني- الجزء الثاني (دكتور عادل شاكر الفيشاوي)

اسم المادة :- دوائر الكترونية الفرقة الثانية
زمن الامتحان : ٩:٣٠٠ – ١٠:٣٠

Answer all the following questions

1-A)

1. The output of an Op-Amp differentiator is proportional to
(a) the RC time constant. (b) the rate at which the input is changing.
(c) the amplitude of the input (d) answers (a) and (b).

2. A voltage follower
(a) has a gain of 1 (b) is noninverting. (c) has zero feedback resistor d) has very high input impedance (e) has all of these.

3.The open-loop gain A_{ol} of a certain op-amp is 150,000, and the common-mode gain A_{cm} is 0.15. The CMRR in decibels is:
a) 10000 b) 1000000 c) 100000 d) 120 dB e) b) and d).

4.An averaging op- amp amplifier has five inputs. The ratio Rf /Ri must be
a) 5 b) 0.2 c) 0.5 d) 1

5. The rate of change of an integrator's output voltage in response to a step input is set by

(a) the RC time constant. (b) the amplitude of the step input.

(c) the current through the capacitor. (d) all of these.

6. An oscillator differs from an amplifier because the oscillator
(a) has more gain (b) requires no input signal
(c) requires no dc supply (d) always has the same output

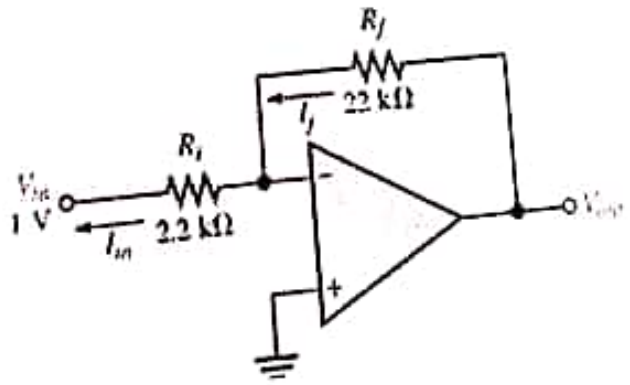
7. In a certain oscillator Av = 50., The attenuation of the feedback circuit must be
(a) 1 (b) 0.01 (c) 10 (d) 0.02

8. In a Wien-bridge oscillator, if the resistances in the positive feedback circuit are decreased, the frequency (a) decreases (b) increases (c) remains the same

9. A phase-shift oscillator has
(a) three RC circuits (b) three LC circuits (c) a T-type circuit (d) a -type circuit

10) Calculate the resonant frequency f_o of the Wien bridge oscillator that has a feedback lead-lag circuit with the following values: C1 = C2 = C= 0.02 μF and R1 = R2 = R = 5.0 kΩ.

1-B) Determine the approximate values for each of the following quantities in the Figure below.
a) Iin b) If c) Vout d) closed-loop gain ACL c) Zin



4- What are the attributes (criteria) for good technical writing?. Describe one of them in details.

3- Describe the hierarchy of technical document in industry.

2- What are the types of technical studies? Discuss two of them in details.

Menoufia university
Faculty of Electronic Eng.
2nd year
Time: 1 hour

Second Mid Term Exam.
Subj: *Technica report writing*
Date: 27-3-2017

الاسم : السكشن : الرقم الاكاديمى:

الامتحان فى اربع صفحات

1-(A) What are the information must be included in the title page of a report?

1-(B) What are the oulines of a formal report?

3-Delete three rows from Record
4-Update the tuple with CLASS ATTRIBUTE "SID = 100 to 200.
5- Insert <'124', 'Sunday 4 pm', null >into class

Question No. 3 (16 Marks)

Consider the following relations.

Student(ssn, name, address, major)
Course(code, title)
Registered(ssn ,code)

Express each of the following in SQL and in relational algebra

1- List the name and address of student they registered
2- List the titles of registered courses
3- List the codes of courses for which no student is registered
4-Names of students and the titles of courses they registered
5- List the SSNs of students who are registered for both 'Database Systems' and 'Analysis of Algorithms'.
6-Rename the entity student (STU) and major(MAJ)

Question No. 4: (11 Marks)

Consider a schema diagram with two relations, R (A, B) and S (B, C), where all values are integers. Make no assumptions about key s. Consider the following three relational algebra expressions:

a. $\pi_{A,C}(R \bowtie \sigma_{B=1} S)$

b. $\pi_A(\sigma_{B=1} R) \times \pi_C(\sigma_{B=1} S)$

c. $\pi_{A,C}(\pi_A R \times \sigma_{B=1} S)$

1- Which query from the above are equivalent and why (illustrate by relation example)
2- Write a SQL query to represent the three queries (a, b ,c)

Achieved Intended Learning Outcomes (ILOs):

	Question No	Q1			Q2		Q3			Q4	
		a	b	c	a	b	a	b	c	a	b
Achieved ILOs	A- Knowledge & Understanding	1.17	1.16	1.17		1.1		1.14	1.1	1.14	1.16
	B- Intellectual skills	2.1, 2.2, 2.3, 2.7	2.3, 2.7	2.4	2.2	2.2	2.7		2.1	2.2	2.3
	C- Professional and practical skills										
	D- General and transferable skills										

الفرقة الثانية

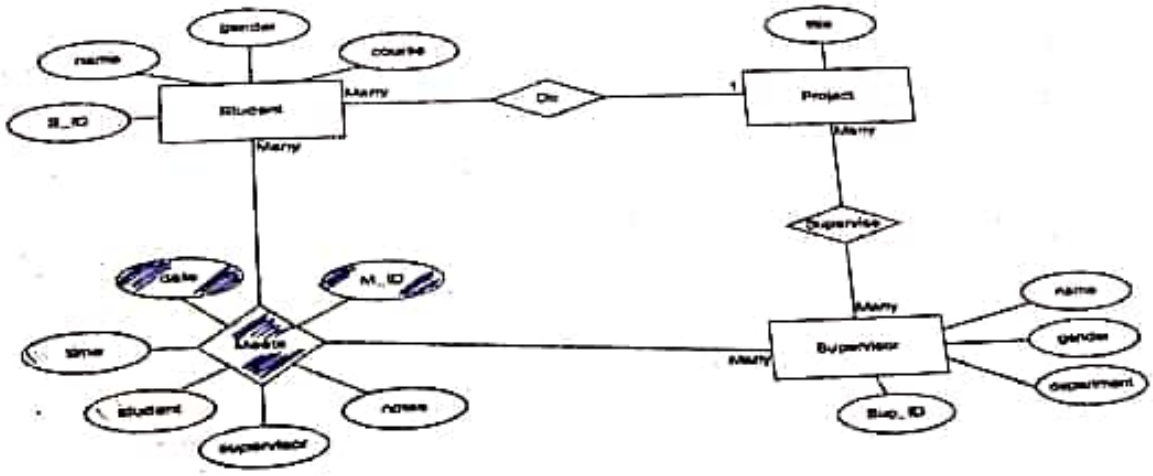
University	: *Menoufia*		*Date*	: *25/05/2017*
Faculty	: *Electronic Engineering*		*Time*	: *3 Hours*
Department	: Computer Science and Eng.		*No. of pages*	: *2*
Academic level	: *2nd Year*		*Full Mark*	: *60 Marks*
Course Name	: Database Systems		*Exam*	: *Final Exam*
Course Code	: CSE 226		*Examiner*	: *Dr. Mervat Mousa, Dr. M. shouman*

Answer all the following questions:

Question No: 1 (15 Marks)

a)
1-Explain the difference between an attribute and value set
2-Explain any 4 types of attributes in ER model with an example
3-What is the difference between the Relation and Relation Scheme

b) The following figure is the ER-diagram of the student project



1- Convert the ER diagram in (b) into UML.
2-Map the ER diagram to a relational database schema (indicate primary and foreign keys).

Question No: 2 (18 Marks)

Consider the following relations.
Scholar (snum: integer, sname: string, major: string, level: string, age: integer)
Class (cname: string, meets at: string, room: string, Sid: integer)
Record (snum: integer, cname: string)
School (Sid: integer, sname: string, address: string)

a) Specify the foreign keys
b) Write the SQL statements required to create these relations, including appropriate versions of all primary and foreign key integrity
c)Explain if any of the following update operations violates the integrity constraints (Domain entity integrity, or referential integrity):
1-Insert three rows into Scholar
2-Insert <'12', '2Ali', 'A12', null, null >Into Scholar.

Part II: You have to answer the questions of this part form the right hand side of your answer sheet. The answer of each question must be in its order.

First Question *36 Min/ 12 Marks*

(a) What is the difference between **Isolated I/O** and **Memory-mapped I/O** methods of interfacing I/O peripherals to the microprocessor?

(b) Define the *control* (command) register in the Programmable Peripheral Interface **8255**, draw the control register with the internal meaning of each bit, and what is the difference between **mode 0**, **mode 1**, and **mode 2** in the **8255 PPI** interface chip.

(c) Develop an **I/O port decoder**, using a **74ALS138**, that generates high-bank I/O strobes for the following **8-bit I/O port** addresses: **11H, 13H, 15H, 17H, 19H, 1BH, 1DH**, and **1FH**. The decoder has three control signals **G1**, $\overline{\textbf{G2A}}$, $\overline{\textbf{G2B}}$.

Second Question *36 Min/ 12 Marks*

(a) Define the Interrupt Vector Table (**IVT**).

(b) Draw a block diagram of the **8259A PIC**.

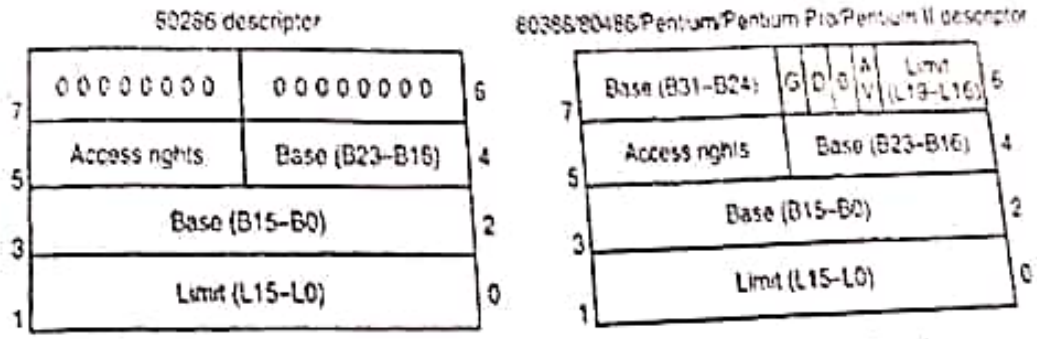
(c) Using a flow chart, compare between the different three transfer modes of the **8237A DMAC**.

(d) An 8086 microprocessor stores the bytes **3A 49 2F 1C** beginning at the address **0008CH**. What is the interrupt type number does this address correspond to? Also, what is the address of the **ISR**?

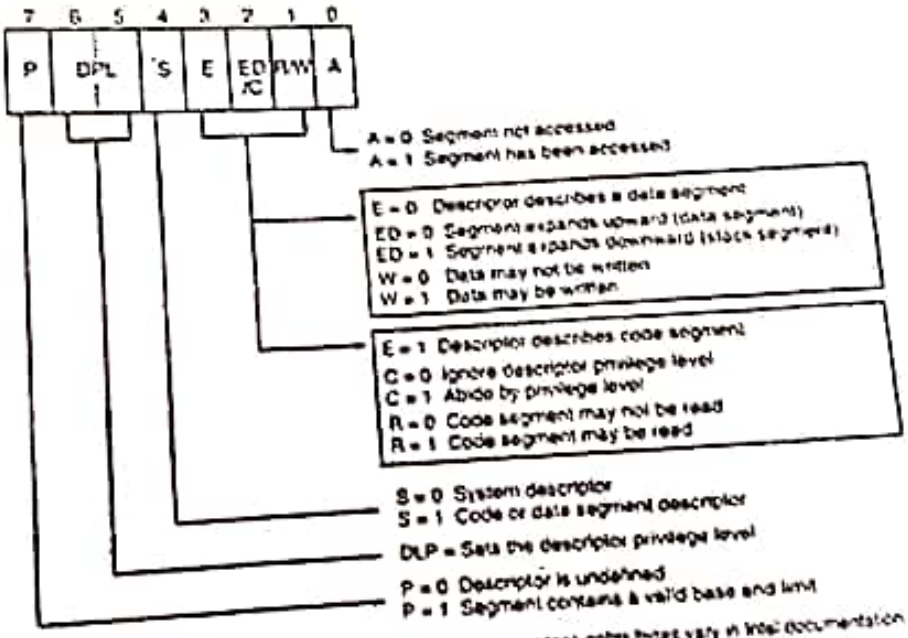
Third Question *36 Min/ 12 Marks*

(a) Using the **LOOP** instruction, write an assembly program that sums the contents of two blocks of data called **BLOCK1** and **BLOCK2** and stores the results on top of the data in **BLOCK2**.

(b) Code a descriptor that describes a memory segment that begins at location **0300000011** and ends at location **05FFFFFFH**. This memory segment is a data segment that grows upward in the memory system and can be written. The descriptor is for a Pentium 4 microproceessor.



The descriptor formats for the 80286 and 80386 through Pentium 4



Note: Some of the letters used to describe the bits in the access rights bytes vary in Intel documentation

The access rights byte for the 80286 through Pentium 4 descriptor

Second Question *36 Min/ 12 Marks*

(a) ***Complete*** each of the following statements:

[1] If the contents of SS = 8000H and ESP = 00009000H, the addressed memory location is .....

[2] If the contents of CS = ... H, SS = ... H, SI = 0100H and IP = 438EH, the address of the next instruction is 83DAEH.

[3] If the contents of DS = ... H, BX = 0100H, and SI = ... H, the address accessed by the execution of the **MOV [SI+100H], EAX** instruction is 12350H.

[4] If the contents of DS = 1100H, BX = 0200H, LIST = 0250H, and SI = 0500H, the address accessed by the execution of the **MOV CL, LIST [BX + SI]** instruction is .....

[5] If the contents of DS = ... H, SS = ... H, BP = 1500H, and SI = 0100H, the address accessed by the execution of the **MOV AL, [BP + SI – 200H]** instruction is 15400H.

[6] If the contents of EAX = 00001000H, EBX = 00002000H, and DS = 0010H, the address accessed by the execution of the **MOV DH, [EBX + 4*EAX + 1000H]** instruction is.....

(b) ***Complete*** the ***missing parts*** in the following table:

№.	*Before*	*Instruction(s) executed*	*After*
[1]	AX: 77ACH CX: 4B35H CF = 1	ADC AX, CX	AX: CX: CF = OF =
[2]	EAX: 00 00 00 75H ECX: 00 00 01 A2H CF = 1	SBB ECX, EAX	EAX: ECX: CF= OF=
[3]	EDX: 80 00 00 00H ZF = 0	DEC EDX	EDX: SF = ZF = OF =
[4]	AL: AAH AH: FFH ZF = 0	TEST AL, 1 JNZ RIGHT TEST AL, 128 JNZ LEFT	AL: AH: ZF =

[5]	DATA1: 00FFH
	DATA2: AA00H
	BX: AAFFH
	CX: F000H
		LEA SI, DATA1
		MOV DI, OFFSET DATA2
		MOV BX, [SI]
		MOV CX, [DI]
		MOV [SI], CX
		MOV [DI], BX
			DATA1:
			DATA2:
			BX:
			CX:

[6]	AX: 0F0FH
	BL: A0H
	CF = 1
		MOV AL, 5
		MOV BL, 7
		MUL BL
		AAM
		OR AX, 3030H
			AX:
			BL:
			CF =

[7]	AX: 1234H BL: ABH SUM: 00CDH CF = 0	ADD AX, [SUM] ADC BL, 05H INC WORD PTR [SUM]	AX: BL: SUM: CF =

P.T.O.

مزقة ثانية

Menoufia University, Faculty of Electronic Engineering,
Computer Science & Engineering Department,
Second Year- First Semester
Microprocessors & Applications (CSE 217)
Examiners: Dr. Ahmed Shouman & Dr. Salah Eldin Shaban

Final Written Exam
Date: 09/01/2017
Time: Three Hours
Total Mark: 60 Marks
No. of Pages: Four

Answer All the Following Five Questions

Part I: *You have to answer the questions of this part form the left hand side of your answer sheet. The answer of each question must be in its order.*

First Question — *36 Min/ 12 Marks*

(a) Draw a diagram that shows how the ***address***, ***data***, and ***control*** buses interconnect various system components, such as the microprocessor, RAM, ROM, and a few I/O devices.

(b) For each of the following statements, write **True** or **False** and *correct* the *wrong* one:

[1] The size of main memory and data bus represent the main differences between Pentium Pro and Pentium 4 microprocessors.
[2] There is an extended memory area in PC or XT.
[3] The real mode operation allows the microprocessor to access both data and programs above the first 1 MB of memory and within it.
[4] The carry flag is affected by unsigned operations.
[5] The DX register is the default offset for extra segment register in string instructions.
[6] The REP prefix is used to repeat any string transfer instruction by the contents of CX times.
[7] The MOV IP, num1 instruction is illegal.
[8] The XCHG AL, num2 instruction is illegal.
[9] The MOV [BX], [DI] instruction is legal.
[10] The MOV BL, CX instruction and the MOV DS, SS instruction are legal.
[11] The program-invisible registers are used to access and specify addresses of global and local descriptor tables.
[12] The zero, interrupt, and trap flags are not used for mathematical operations.
[13] In the 80x86 microprocessor, the overflow flag is used to check for unsigned arithmetic overflow.
[14] In a real mode, if DS = 90A3H, then the range of physical addresses for the data segment is 90A30H – A0A20H.
[15] As a near procedure is called, the contents of IP and CS are pushed onto the stack and next the program branches to the procedure.
[16] The PUSHFD instruction saves FLAGs and the POPAD instruction pops only all 16-bit registers.
[17] The LEA instruction loads a 16- or 32-bit register with the offset address of the data specified by the operand.
[18] The LDS EDI, LIST instruction loads DS and EDI with the 32-bit contents of data segment memory location LIST.
[19] The instruction MOV BX, OFFSET LIST performs the same function as the instruction LEA BX, OFFSET LIST.
[20] 16-bits are input to AX from I/O port p8 after the execution of instruction OUT AX, p8.

P.T.O.

Part 2

Answer all the following questions:

Question No 1: (20 Marks)

a) Evaluate: 1. $\Delta^6 (1-ax)(1-bx^2)(1-cx^3)$

2. $\left(\frac{\Delta^2}{E}\right) e^x - \frac{E\, e^x}{\Delta^2 e^x}$ (5 Marks)

b) Prove that:

$$\Delta^n y_{x-n} = y_x - \binom{n}{1} y_{x-1} + \binom{n}{2} y_{x-2} - \binom{n}{3} y_{x-3} + \cdots$$ (5 Marks)

c) Solve the following difference equation:

$$y_{n+3} + 8y_n = (2n^2 + 3n)\, 2^n$$ (10 Marks)

Question No 2: (15 Marks)

a) Evaluate the second Lagrange polynomial for $f(x) = \sqrt{x}$ on $[100,144]$ using the nodes $x_0 = 100$, $x_1 = 121$ and $x_2 = 144$. Determine the error form for this polynomial when $x_2 = 116$, and the maximum error when the polynomial is used to approximate $f(x)$ for $x \in [100,144]$. (7 Marks)

b) Using the data:

x	1.0	1.3	1.6	1.9	2.2
$f(x)$	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

Find $f(1.1)$, $f(1.3)$, $f(2.0)$ and $f(1.5)$ (8 Marks)

(15 Marks)

Question No 3:

a) Use the RK4 method with $h = 0.1$ to obtain an approximation to $y(1.2)$ for the solution of the initial value problem $y' = 0.2\,x\,y$, $y(1) = 1$. Compare this solution with the exact values. (10 Marks)

b) Estimate the value of $\int_0^{0.4} \frac{1}{1+x^2}\, dx$, $h = 0.1$

By using Composite Simpson's Rule and estimate the error (5 Marks)

Where $\int_a^b f(x)dx = \frac{h}{3}[f(x_0) + 4\sum_{i=1,3}^{n-1} f(x_i) + 2\sum_{i=2,4}^{n-2} f(x_i) + f(x_n)]$

Good Luck Dr. Hany Elgohary

University	:Menoufia	Date	:23/ 01/2017
Faculty	:Electronic Engineering	Time	:3 Hours
Department	:Physics and Engineering Mathematics	No. of pages	:2
Academic level	:Second year	Full Mark	:100 Marks
Course Name	:Mathematics (5)	Exam	:Final Exam
Course Code	:PEM (5)	Examiner	:Prof. Dr. Said El-Serafi

Part 1

Answer two questions of the following questions:

Question No 1:

a) **Find the Fourier series for the function:** (25 Marks)

$$f(x)=\begin{cases}-3 & -\pi<x<0\\ 3 & 0<x<\pi\end{cases}$$

b) **Find the Fourier series for the function:** (12 Marks)

$f(x)=|x|-1$ **For** $-1\le x\le 1$, $f(x+2)=f(x)$ (13 Marks)

Question No 2: (25 Marks)

a) **Expand the function:**

$f(x)=1-x$, $0<x<1$ **where** $2T=4$ **into Fourier series which consists only(Even cosine harmonics and odd sine harmonics).** (13 Marks)

b) **Find the complex form of the Fourier series of the function:**

$f(x)=e^x$ **when** $-\pi<x<\pi$, $f(x+2\pi)=f(x)$ (12 Marks)

Question No 3: (25 Marks)

a) **Find** a_0 , a_1 , b_1 , a_2 , b_2 **for the coefficients of Fourier series for the function** $y=f(x)$, $(0<x<2\pi)$ **represented by the table:** (15 Marks)

x	0	30	60	90	120	150	180	210	240	270	300	330
y	38	38	12	4	14	4	-18	-23	-27	-24	8	32

b) **Find the Fourier integral representation of the function:**

$$f(x)=\begin{cases}1 & |x|<1\\ 0 & |x|>1\end{cases}$$ (10 Marks)

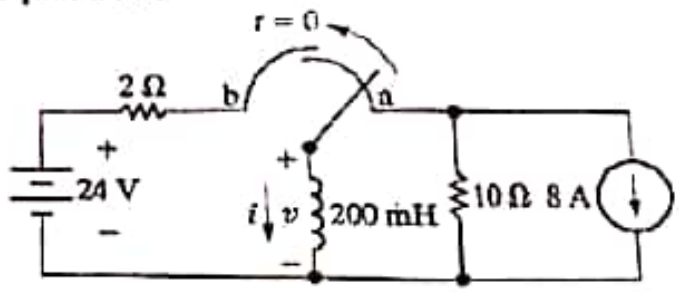
Question 1: (12 Marks)

1-a The switch in the circuit shown in Fig. has been in position a for a long time. At $t = 0$, the switch moves from position a to position b. The switch is a make-before-break type; that is, the connection at position b is established before the connection at position a is broken, so there is no interruption of current through the inductor

a) Find the expression for i(t) for, $t \geq 0$

b) What is the initial voltage across the inductor just after the switch has been moved to position b?

c) How many milliseconds after the switch has been moved does the inductor voltage equal 24V?

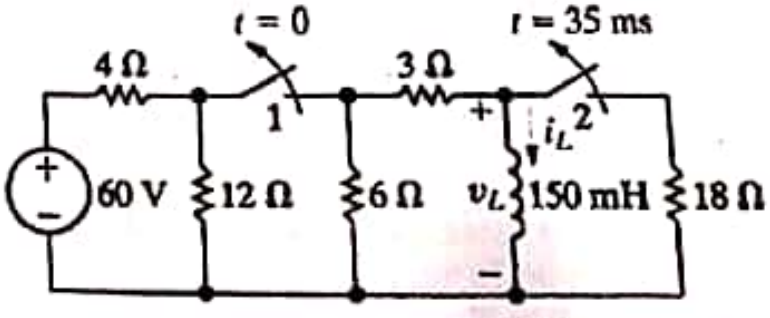


1-b The two switches in the circuit shown in Fig. have been closed for a long time. At t=0, switch1 is opened. Then, 35 ms later, switch2 is opened.

a) Find $i_L(t)$ for $0 \leq t \leq 35ms$ b) Find $i_L(t)$ for $t \geq 35ms$

c) What percentage of the initial energy stored in the 150mH inductor is dissipated in the 18Ω resistor?

d) Repeat(c)for the 3 Ω resistor. e) Repeat(c) for the 6 Ω resistor.



ثانية

University	:	*Menoufia*	*Date*	:	*2/01/2017*
Faculty	:	*Electronic Engineering*	*Time*	:	*3 Hours*
Department	:	*General*	*No. of pages*	:	*1*
Academic level	:	*2nd Year*	*No. of Questions*	:	*2*
Course Name	:	*Electrostatic Fields*	*Full Mark*	:	*30 Marks*
Course Code	:	*ECE 214*	*Exam*	:	*Final Exam*
Academic Year	:	*2016/2017*	*Examiner*	:	*Dr. Abdelmageed*

Answer all the following questions :

Question No 1 : **(15 Marks)**

a) A current sheet $\mathbf{K} = 5\mathbf{a}_y$ mA/m flows in the region $-3 < x < 3$m in the plane $z = 0$. Calculate **H** at P(0, 0, 5). (5 Marks)

b) Given an infinite solid cylinder of radius a m, carrying total uniform current 1 A. find the steady magnetic field at $\rho < a$, and for $\rho > a$. (5 Marks)

c) The magnetic field intensity is given in a certain region of space as $\mathbf{H} = \frac{x+2y}{z^2}\mathbf{a}_x + \frac{2}{z}\mathbf{a}_z$ A/m. (a) Find $\nabla \times \mathbf{H}$. (b) Find **J**. (c) Use **J** to find the total current passing through the surface $z = 3$, $2 \le x \le 4$, $2 \le y \le 4$, in the $\mathbf{a}_z$ direction. (d) Show that the same result is obtained using the other side of Stokes' theorem.

(15 Marks)

Question No 2:

a) Prove that $\nabla \times \mathbf{H} = \mathbf{J}$ is not valid in time-varying field. Show how Maxwell's corrected this equation in time varying fields. Making use of Maxwell's equation interpret why ac current can pass through capacitors. (5 Marks)

b) Select the value of K so that the following pair of fields; (5 Marks)

$\mathbf{E} = k\cos(10^6 t - 100x)\,\mathbf{a}_y$ m V/m $\mathbf{H} = 10\cos(10^6 t - 100x)\,\mathbf{a}_z$ mA/m

satisfies Maxwell's equations in a region where $\sigma = 0$ and $\rho_v = 0$, $\mu = 0.25$ H/m, $\varepsilon = 0.01$ F/m.

c) The unit vector $\mathbf{a}_n = 0.51\,\mathbf{a}_x + 0.6\,\mathbf{a}_y + 0.62\,\mathbf{a}_z$, is directed from region 2 ($\varepsilon_{r2}=2.5$, $\mu_{r2}=2$, $\sigma_2=0$) toward region 1 ($\varepsilon_{r1}=4$, $\mu_{r1}=10$, $\sigma_1=0$). If $\mathbf{H}_1 = (30\,\mathbf{a}_x + 50\,\mathbf{a}_y - 100\,\mathbf{a}_z)\sin 300t$ μA/m at point *P* in region 1 adjacent to the boundary, find the amplitude at *P* of. (i) H_{n1}, (ii) H_{t1} (iii) H_{n2} (iv) H_2 (5 Marks)

Data Sheet:

$$\int_{x_1}^{x_2} \frac{dx}{(a^2+x^2)^{3/2}} = \frac{1}{a^2}\frac{x}{\sqrt{a^2+x^2}}\Big|_{x_1}^{x_2} \qquad \int_{x_1}^{x_2} \frac{dx}{(a^2+x^2)} = \frac{1}{a}\tan^{-1}\frac{x}{a}\Big|_{x_1}^{x_2}$$

$$\varepsilon_0 = 8.854 \times 10^{-12}\,\text{F/m} \qquad \mu_0 = 4\pi \times 10^{-7}\,\text{H/m}$$

Question 4. [15 Marks]: For the system shown in Fig. 4, if $r(t) = unit\ step$ function, determine:

a. K_p that corresponds to maximum overshoot $MP = 20\%$.
b. The time of the maximum overshoot t_p.

Question 5. [15 Marks]: Given the system shown in Fig. 5.

a. Find the steady state error e_{ss} for the cases of unit step and unit ramp inputs, if: $G(s) = \frac{K(0.5s+1)}{s(s+1)(2s+1)(s^2+s+1)}$.

b. Given the closed loop control system shown in Fig. 6, with $G_1(s) = \frac{3(s+2)}{2s}$, $G_3(s) = 2$, and the system response for a unit step is $c(t) = \frac{1}{2} + 2e^{-3t} - \frac{3}{2}e^{-4t}$. Find the unknown transfer function $G_2(s)$.

Question 6. [10 Marks]: Given the system shown in Fig. 7, with unit step input function. Using Routh or Hurwitz criterion, determine the conditions of K_p and T_N for stable system.

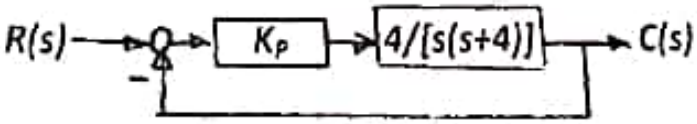


Fig. 4

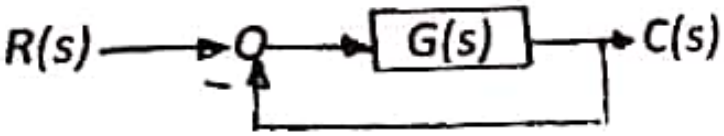


Fig. 5

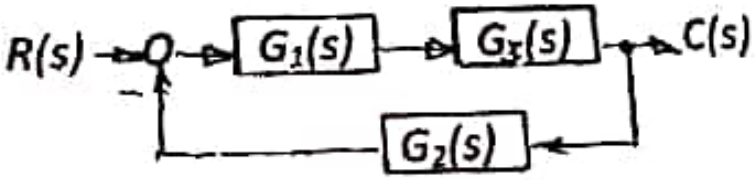


Fig. 6

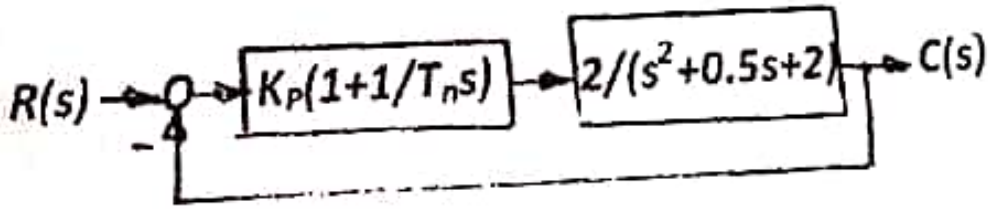


Fig. 7

Best wishes

ثامنية

University:	Electronic Engineering	Date:	January 16th 2017
Faculty:	Industrial Elec. &	Time:	3 Hours
Department:	Control	No. of Pages:	2
Academic level:	2nd Year	No. of Questions:	6
Course Name:	Control Engineering	Full Mark:	70 Marks
Course Code:	ACE 215	Exam:	Final Exam
Academic Year:	2016-2017	Examiner:	Prof. Dr. E. El-Madbouly Dr. R. Shalaby

SOLVE THE FOLLOWING QUESTIONS

Question 1. [12 Marks]

a. Deduce the sensitivity of a system's closed-loop transfer function to the variation of its feedback path.

b. For the circuit shown in Fig.1:
- calculate the voltage transfer function $\frac{V_o(s)}{V_i(s)}$,
- calculate its unit-step response.

Question 2. [12 Marks]

a. For the mechanical systems shown in Fig. 2,
- obtain the equations of motion,
- draw the parallel equivalent electric circuit.

b. Given the transfer function $\frac{Y(s)}{R(s)} = \frac{s^2+20}{s^4+20s^3+10s^2+7s+20}$, select the states, write state equation and output equation in phase-variable form.

Question 3. [6 Marks]: Consider the signal-flow graph depicted in Fig. 3,
- draw the equivalent block diagram, and
- apply Mason's formula to calculate $\frac{Y(s)}{R(s)}$.

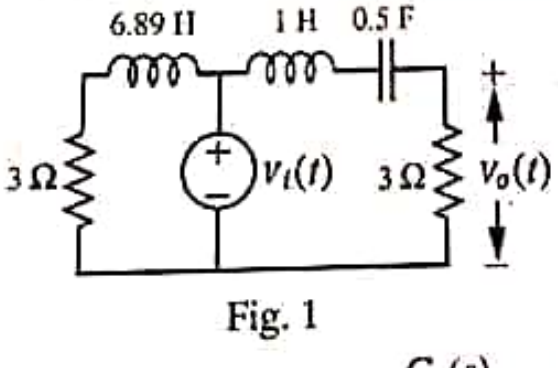


Fig. 1

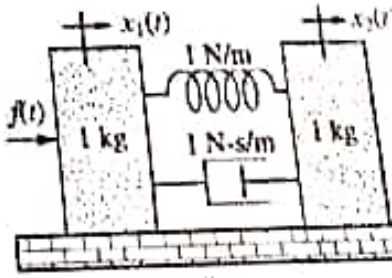


Fig. 2

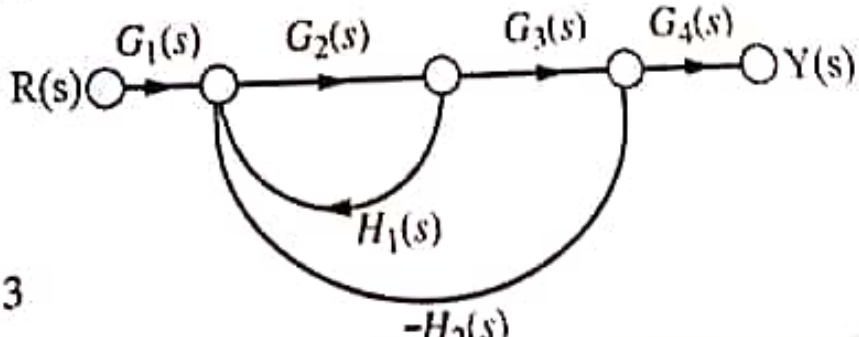


Fig. 3

University	: Menoufia		Date	: 2/01/201*
Faculty	: Electronic Engineering		Time	: 3 Hours
Department	: General		No. of pages	: 1
Academic level	: 2nd Year		No. of Questions	: 2
Course Name	: Electrostatic Fields		Full Mark	: 30 Marks
Course Code	: ECE 214		Exam	: Final Exam
Academic Year	: 2016-201*		Examiner	: Dr. Abdelmaged

Answer all the following questions :

Question No 1: **(15 Marks)**

a) A current sheet $\mathbf{K} = 5\mathbf{a}_y$ mA/m flows in the region $-3 < x < 3$m in the plane $z = 0$. Calculate $\mathbf{H}$ at P(0, 0, 5). (5 Marks)

b) Given an infinite solid cylinder of radius a m, carrying total uniform current 1 A, find the steady magnetic field at $\rho < a$, and for $\rho > a$. (5 Marks)

c) The magnetic field intensity is given in a certain region of space as $\mathbf{H} = \frac{x+2y}{\rho^2}\mathbf{a}_x + \frac{z}{z}\mathbf{a}_z$ A/m. (a) Find $\nabla \times \mathbf{H}$. (b) Find $\mathbf{J}$. (c) Use $\mathbf{J}$ to find the total current passing through the surface $z = 3$, $2 \le x \le 4$, $2 \le y \le 4$, in the $\mathbf{a}_z$ direction. (d) Show that the same result is obtained using the other side of Stokes' theorem.

Question No 2: **(15 Marks)**

a) Prove that $\nabla \times \mathbf{H} = \mathbf{J}$ is not valid in time-varying field. Show how Maxwell's corrected this equation in time varying fields. Making use of Maxwell's equation interpret why ac current can pass through capacitors. (5 Marks)

b) Select the value of K so that the following pair of fields; (5 Marks)

$\mathbf{E} = k\cos(10^6 t - 100x)\,\mathbf{a}_y$ m V/m $\mathbf{H} = 10\cos(10^6 t - 100x)\,\mathbf{a}_z$ mA/m

satisfies Maxwell's equations in a region where $\sigma = 0$and $\rho_v = 0$, $\mu = 0.25$ H/m, $\varepsilon = 0.01$ F/m.

c) The unit vector $\mathbf{a}_n = 0.51\,\mathbf{a}_x + 0.6\,\mathbf{a}_y + 0.62\,\mathbf{a}_z$, is directed from region 2 ($\varepsilon_{r2}=2.5$, $\mu_{r2}=2$, $\sigma_2=0$) toward region 1 ($\varepsilon_{r1}=4$, $\mu_{r1}=10$, $\sigma_1=0$). If $\mathbf{H}_1 = (30\,\mathbf{a}_x + 50\,\mathbf{a}_y - 100\,\mathbf{a}_z)\sin 300t$ μA/m at point P in region 1 adjacent to the boundary, find the amplitude at P of. (i) H_{n1}, (ii) H_{t1} (iii) H_{n2} (iv) H_2

(5 Marks)

Data Sheet:

$$\int_{x_1}^{x_2} \frac{dx}{(a^2+x^2)^{3/2}} = \frac{1}{a^2}\frac{x}{\sqrt{a^2+x^2}}\Big|_{x_1}^{x_2} \qquad \int_{x_1}^{x_2} \frac{dx}{(a^2+x^2)} = \frac{1}{a}\tan^{-1}\frac{x}{a}\Big|_{x_1}^{x_2}$$

$$\varepsilon_0 = 8.854 \times 10^{-12}\,\text{F/m} \qquad \mu_0 = 4\pi \times 10^{-7}\,\text{H/m}$$

Part 2

Answer all the following questions:

Question No 1: (20 Marks)

a) Evaluate: 1. $\Delta^6 (1-ax)(1-bx^2)(1-cx^3)$

2. $\left(\frac{\Delta^2}{E}\right) e^x \quad \frac{E\, e^x}{\Delta^2 e^x}$ (5 Marks)

b) Prove that:

$$\Delta^n y_{x-n} = y_x - \binom{n}{1} y_{x-1} + \binom{n}{2} y_{x-2} - \binom{n}{3} y_{x-3} + \cdots$$ (5 Marks)

c) Solve the following difference equation:

$$y_{n+3} + 8y_n = (2n^2 + 3n)\, 2^n$$ (10 Marks)

(15 Marks)

Question No 2:

a) Evaluate the second Lagrange polynomial for $f(x) = \sqrt{x}$ on $[100.144]$ using the nodes $x_0 = 100$, $x_1 = 121$ and $x_2 = 144$. Determine the error form for this polynomial when $x_2 = 116$, and the maximum error when the polynomial is used to approximate $f(x)$ for $x \in [100,144]$. (7 Marks)

b) Using the data:

x	1.0	1.3	1.6	1.9	2.2
$f(x)$	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

Find $f(1.1)$, $f(1.3)$, $f(2.0)$ and $f(1.5)$ (8 Marks)

(15 Marks)

Question No 3:

a) Use the RK4 method with $h = 0.1$ to obtain an approximation to $y(1.2)$ for the solution of the initial value problem $y' = 0.2\, x\, y$, $y(1) = 1$. Compare this solution with the exact values. (10 Marks)

b) Estimate the value of $\int_0^{0.4} \frac{1}{1+x^2}\, dx$, $h = 0.1$ (5 Marks)

By using Composite Simpson's Rule and estimate the error

Where $\int_a^b f(x)dx = \frac{h}{3}[f(x_0) + 4\sum_{i=1,3}^{n-1} f(x_i) + 2\sum_{i=2,4}^{n-2} f(x_i) + f(x_n)]$

Good Luck Dr. Hany Elgohary

ثانية

University	:Menoufia	Date	:23/ 01/2017
Faculty	:Electronic Engineering	Time	:3 Hours
Department	:Physics and Engineering Mathematics	No. of pages	:2
Academic level	:Second year	Full Mark	:100 Marks
Course Name	:Mathematics (5)	Exam	:Final Exam
Course Code	:PEM (5)	Examiner	:Prof. Dr. Said El-Serafi

Part 1

Answer two questions of the following questions:

Question No 1: (25 Marks)

a) Find the Fourier series for the function: (12 Marks)

$$f(x)=\begin{cases}-3 & -\pi<x<0\\ 3 & 0<x<\pi\end{cases}$$

b) Find the Fourier series for the function: (13 Marks)

$f(x)=|x|-1$ For $-1\le x\le 1$, $f(x+2)=f(x)$

(25 Marks)

Question No 2:

a) Expand the function:

$f(x)=1-x$, $0<x<1$ where $2T=4$ into Fourier series which consists only(Even cosine harmonics and odd sine harmonics). (13 Marks)

b) Find the complex form of the Fourier series of the function: (12 Marks)

$f(x)=e^{x}$ when $-\pi<x<\pi$, $f(x+2\pi)=f(x)$

(25 Marks)

Question No 3:

a) Find a_0 ,a_1, b_1, a_2 , b_2 for the coefficients of Fourier series for the function $y=f(x)$, $(0<x<2\pi)$ represented by the table: (15 Marks)

x	0	30	60	90	120	150	180	210	240	270	300	330
y	38	38	12	4	14	4	-18	-23	-27	-24	8	32

b) Find the Fourier integral representation of the function: (10 Marks)

$$f(x)=\begin{cases}1 & |x|<1\\ 0 & |x|>1\end{cases}$$

Question No 3 : **(17 Marks)**

a) An L-R-C series circuit contains a coil of inductance 10H and resistance 10Ω and a capacitor of capacitance 100 μF. Assuming current i= 0 at time t= 0, determine (a) the state of damping in the circuit, and (b) an expression for the current when a step voltage of 5 V is applied to the circuit. (8 marks)

b) The circuit of Fig. 1 has V_{CC} =10 V, L = 100 mH, R=10Ω , t_1 = 0.1Sec. , and T = 1Sec. . Determine (a) the peak current and peak energy storage in the inductor, (b) the peak , instantaneous and average power supplied by the source. (9 marks)

Question No 4 : **(18 Marks)**

a) For the circuit shown in Fig. 2, V_m= 200 V at 60 Hz and R = 10 Ω. (a) Assume L is infinitely large. Determine the power absorbed by the load and the power factor as seen by the source. Sketch v_o, i_{D1}, and i_{D2}. (b) Determine the average current in each diode. (c) For a finite inductance, determine L such that the peak-to-peak current is no more than 20 percent of the average current. (9 marks)

b) A full-wave controlled bridge rectifier has an ac source with V_m = 150V and 60Hz and 10-Ω load resistor. The delay angle is 50°. (a) Draw the circuit diagram . (b) Determine the average current in the load. (c) The power absorbed by the load and the source voltamperes. (9 marks)

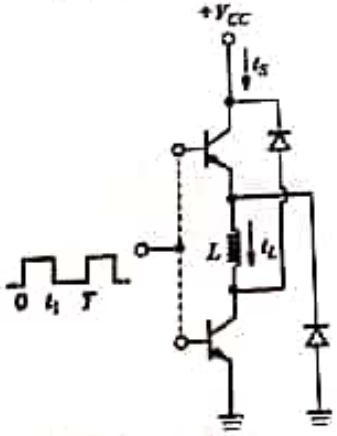


Fig.1

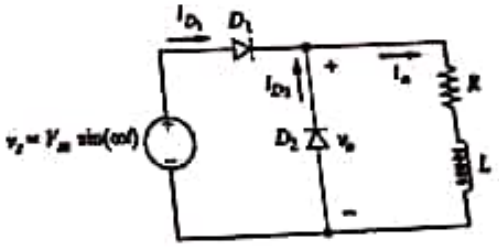


Fig.2

Note : The Fourier series for the half-wave rectified sine wave is given by ;

$$v(t) = \frac{V_m}{\pi} + \frac{V_m}{2}\sin(\omega_0 t) - \sum_{n=2,4,6\ldots}^{\infty} \frac{2V_m}{(n^2-1)\pi}\cos(n\omega_0 t)$$

Good Luck

University	Menoufia		Date	05/01/2017
Faculty	Electronic Engineering		Time	3 Hours
Department	General		No.of Pages	2
Academic Level	2nd Year		No. of Questions	4
Academic Term	1st Term		Full Mark	70
Course Name	Power Electronics		Exam	Final Exam
Course Code	ACE 216		Examiner	Prof. Dr. Magdy Kouth
Academic Year	2016/ 2017			Dr. Ramy Farid

Answer all the following questions:

Question 1 **(18 marks)**

Discuss the relaxation oscillator circuit using UJT by

A. Drawing the schematic circuit diagram **(2 marks)**
B. Sketching the signals at the 3 terminals of the UJT (B1, B2, and E) **(2 marks)**
C. Determine the accepted range of each component (R & C) and why? **(2 marks)**
D. What is the frequency of oscillation (for different values of η) **(2 marks)**
E. Now, it is required to use the relaxation oscillator circuit through a switch to control the operation of AC motor as
   - Motor starts rotating with its full speed after certain time from closing the switch
   - When the switch is opened, motor is turned off (stopped) .

   Draw a complete schematic circuit diagram and then sketch the applied signal to the motor with respect to closing the switch **(5 marks)**

F. Make a simple modification in the above relaxation oscillator circuit to design a triggering circuit based on current source, which is controlled by voltage feedback to control in a load Draw a complete circuit diagram and then sketch all important signals **(5 marks)**

(17 marks)

Question 2

A. Mention 3 methods to turn **ON** SCRs, and then illustrate how to overcome the unwanted turn ON methods? **(5 marks)**
B. Draw a complete circuit diagram that uses **an SCR** to perform **full-wave unrectified** (bidirectional) control using UJT and pulse transformer in the triggering circuit, then sketch all important curves **(4 marks)**
C. Draw a complete circuit diagram that uses **an SCR** to perform **full-wave rectifie** (unidirectional) control using UJT and pulse transformer in the triggering circuit, the sketch all important curves **(4 mark**
D. Draw a complete schematic circuit diagram that uses **two SCRs** to perform **full-wa unrectified** (bidirectional) control using UJT and pulse transformer in the trigge circuit, then sketch all important curves **(4 ma**

5. (18 Marks)

(a) Determine the convergence region of the sequence

$$\{f_n\} = \begin{cases} 3^n & \text{If} \quad n < 0 \\ 3^{-n} & \text{If} \quad n = 0, 2, 4 \ldots \\ 2^{-n} & \text{If} \quad n = 1, 3, 5 \ldots \end{cases}$$

(b) Solve the following diffetence equations

$$f_{n+2} - 5f_{n+1} + 6f_n = u_n, \qquad f_0 = 0, \quad f_1 = 0.$$

(c) Determine the sum of the sequence $\left(\frac{1}{4}\right)^n$

6. (16 Marks)

(a) In a factory we have four machines; the first machine produces 1000 items per day with 1% defective item, the second machine produces 1200 items per day with 0.5% defective item, the third machine produces 1800 items per day with 0.5% defective item, and the fourth machine produces 2000 items per day with 1% defective item. What is :

1. The probability of selecting a defective item?
2. The probability that his defective item is produced by the third machine?

(b) If A and B are any two events in a sample space S, $P(A) > 0$, prove that

$$P(B) = P(B/A)\,P(A) + P(B/A^c) \cdot P(A^c)$$

University	Menoufia	Date	29/05/2017
Faculty	Electronic Engineering	Time	3 Hour
Department	Physics & Eng. Maths	No. of Pages	2
Academic Level	Second Year	Full Mark	100 Marks
Course Name	Eng. Math	Exam	Terminal
Course Code	PM6	Examiners	Prof. S. El Serf, Dr. R. El Shazawy

Answer all the following

1. (20 Marks) Evaluate:

i) $\sinh(-2+3i)$, ii) $e^{-2+\frac{\pi}{2}i}$

iii) $\int_0^{2+i} \cos z \, dz$, iv) $\int_{-1+i}^{2+2i} \frac{1}{z} \, dz$

2. (20 Marks)

(a) Show that the real function:

$$u(x,y) = 4xy^3 - 4x^3y + x$$

is a harmonic function.

(b) Find the conjugate harmonic function $v(x,y)$.

(c) Construct the complex analytic function $f(z) = u + iv$

(d) Find $f'(z)$ and evaluate it at $z = 1+i$

3. (10 Marks) By Cauchy's residue theorem, evaluate: $\oint_C \frac{z}{z^2+9} dz$, where C is the circle $|z-2i| = 4$

4

4. (16 Marks)

(a) Find the general solution of the equation

$$\left(-2x^4 + xy^3\right)\frac{\partial z}{\partial x} + \left(-x^3y + 2y^4\right)\frac{\partial z}{\partial y} = 9\left(x^3 - y^3\right)z$$

(b) Solve

$$x^2\frac{\partial^2 z}{\partial x^2} - y^2\frac{\partial^2 z}{\partial y^2} - y\frac{\partial z}{\partial y} + x\frac{\partial z}{\partial x} = 0$$

Menoufia University
Faculty of Electronic Engineering
2nd year. 1st Term Exam.
Very large scale Integrated Circuit Technology
Time allowed: 3 hours
Prof.Dr. Hossam Ahmed

10-1-2018

ANSWER ALL QUESTIONS:

1- a) Remembersthe six processes for planar technologyofbipolar junction transistor (BPJ)?(Remember the points don't Explain).

b) Define lithography processes and explain the steps of Photo lithography processesuse the color in your explained drawingboxes?

2-For each of the two transistors cases (a,b) below, find the NMOS drain current I_D. Use the followingparameters:

$V_{T0} = 0.5V, \gamma = 0.2\ V^{1/2}$, $\lambda = 0.05\ V^{-1}$, $|2\phi_f| = 0.52V$; $k'_n = 80\ \mu A/V^2$, $(W/L)_n = 20$

a. V_D=3V, V_{Ga}=3V, V_{Sa}=1V, V_{Bl}=1V
b. V_D=3V, V_{Gb}=4V, V_{Sb}=1V, V_{Bl}=0 V

3- Calculate thresholdvoltage V_{to} at V_{SS}=0 for the polysilicon gate.
Given the following parameters, p-substrate $N_A = 10^{16}\ cm^{-3}$, polysilicon gate doping concentration $N_D = 10^{16}\ cm^{-3}$, intrinsic concentration of Si, $ni = 1.45 \times 10^{10}\ cm^{-3}$, gate oxide thickness t_{ox} =500 Å, oxide charge density $N_{ox} = 4 \times 10^{10} cm^{-2}$, and

$\varphi_{F(Gate\ polysilicon)} = -0.55$ V.

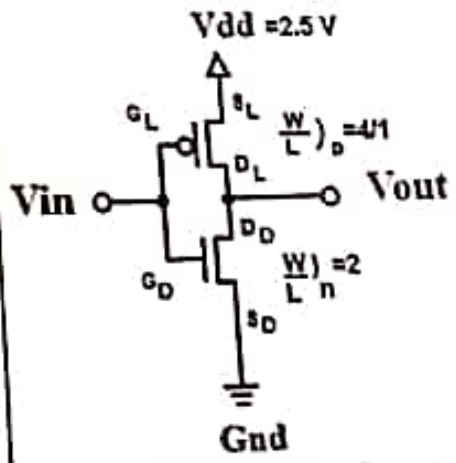
4- Consider a static CMOS inverter with the following parameters. Assume all transistors fabrication channel length L=0.25 um (to have λ scale),

V_{dd}=2.5V,V_{Tn}= 0.5V ,V_{Tp}= 0.5V ,λ= 0, kn= 100 μA/V², kp= 50 μA/V² ,

a-Calculate: VOH, VOL, VIL, VM By the help of define operation points on Current Voltage charactristic curve and voltage transfer curve?

b- Calculate Nominal Low Voltage

c-Draw the stick Diagram and the Layout Diagram?



University	:	Menoufia		Date	: 14/01/2018
Faculty	:	Electronic Engineering		Time	: 3 Hours
Department	:	Electronics and Electrical Comm.		No. of pages	: 1
Academic level	:	2nd Year		Full Mark	: 70 Marks
Course Name	:	Static Field Theory		Exam	: Final Exam
Course Code	:	ECE 214		Examiner	: Dr: Ahmed I. Bahnacy

برجاء اجابة الجزء الاول من الناحية اليمنى والجزء الثاني من الناحية اليسرى في كراسة الاجابة

Part I

Answer all the following questions :

Question No 1(11 Marks) :

1- a - For the scalar function $f=x^2 y^2 z^2$, Evaluate ∇f and $\nabla^2 f$ at the point P(4,5,6) and verify that $\nabla \times \nabla f = 0$. (5 Marks)

1-b- Determine the electric field intensity E at the point P(2,2,2) produced by two point charges, Q_1= 3nC located at the point P_1(1,1,0) and Q_2=4nC located at the point P_2(1,-1,0). (6 Marks)

Question No 2 (12 Marks):

2-a-Using Gauss's law determine the electric field intensity E of a uniform line charge of linear charge density ρ_L lying along z axis and extending from z=- ∞ to z= ∞. Calculate the value of E at a radial distance ρ=2m from the line charge when ρ_L =30nC/m . (6 Marks).

2-b- Derive expressions for the electrostatic potential V and electric field intensity E produced by a small electric dipole composed of two point charges +q positioned at P_1(0,0,d/2) and –q positioned at P_2(0,0,-d/2) at a distant point P separated by distance r from the center of the dipole, r>>d. Determine V and E when q=100nC, d=10 cm, r=10m and θ=45°. (6 Marks)

Hint: $\nabla V = \frac{\partial V}{\partial r}\mathbf{a}_r + \frac{1}{r}\frac{\partial V}{\partial \theta}\mathbf{a}_\theta + \frac{1}{r\sin\theta}\frac{\partial V}{\partial \varphi}\mathbf{a}_\varphi$ (Spherical Coordinates)

Question No 3 (12 Marks):

3-a- Derive the electrostatic boundary conditions at the interface between perfect conductor and perfect dielectric. (4 Marks)

3-b- Write Poisson's and Laplaces's equations. (2 Marks)

3-c- Using Laplace's equation, determine the potential distribution between the plates of parallel plate capacitor, the electric field intensity and the electric flux density between the plates, the surface charge density on one plate, and then find the capacitance.
Assume the potential of one plate is Vo and the potential of the other plate is zero and V is function of x only. (6 Marks)

مع أطيب الأمنيات بالنجاح والتفوق

الفرقة الثانية

University	: Menoufia	Date	:	24/12/2017
Faculty	: Electronic Engineering	Time	:	90 M
Department	: Physics & Eng. Maths.	No. of Pages	:	1
Academic Level	: Second Year	Full Mark	:	150 Marks
Course Name	: Eng. Math.	Exam	:	Terminal
Course Code	: PM5	Examiners	:	Dr. R. El-Shanawany

Answer all the following.

1. (16 Marks)

(a) Expand into Fourier's series the function $f(x)$ defined in the interval $[-\pi, \pi]$ by the conditions

$$f(x) = \begin{cases} a & \text{for } -\pi \le x < 0 \\ b & \text{for } 0 < x \le \pi \end{cases}$$

where a and b are arbitrary numbers.

(b) Expand the Fourier series of the function $f(x) = x - 6$ considered in the interval $3 \le x \le 9$, its period $2\ell = 6$.

2. (18 Marks)

(a) Write down the complex form of Fourier's series and the formulas for its coefficients.

(b) Construct the Fourier series of the function $f(x) = |x|$ considered in the interval $[-\pi, \pi]$ and evaluate $\sum_{n=1}^{\infty} \frac{1}{n^2}$.

(c) Show that the system of functions

$$\left\{ \frac{1}{\sqrt{2\pi}}, \frac{\cos x}{\sqrt{\pi}}, \frac{\sin x}{\sqrt{\pi}}, \cdots, \frac{\cos nx}{\sqrt{\pi}}, \frac{\sin nx}{\sqrt{\pi}}, \cdots \right\}$$

is an orthonormal system for the interval $[-\pi, \pi]$.

3. (16 Marks)

(a) Compute the cosine series of the given function on the given interval,

$$f(x) = \begin{cases} 3 & 0 \le x < \frac{\pi}{2} \\ 6 & \frac{\pi}{2} \le x \le \pi \end{cases}$$

Answer the following questions:

1. (a) Round-off 027.0085 correct to 5 significant figures.

   (b) If $\pi = \frac{22}{7}$ is approximated as 3.14, find the absolute error, relative error and relative percentage error.

2. Find the least squares polynomial of second degree for the data in the following table. Compute the error E.

x_i	1.0	1.1	1.3	1.5	1.9
y_i	1.84	1.96	2.21	2.45	2.94

3. Use data in the table which given in question 2 to determine x for $y = 2.8$.

4. Evaluate $I = \int_0^{0.6} \frac{x}{\cos x} dx$ taking $n = 6$ and use

   (i) Trapezoidal rule. (ii) Simpson's three-three-eighths rule.

   Compare your results with the exact solution $I = 0.198022$ by using the meaning of relative error.

5. Evaluate [2/2] Padé approximant for following series:

$$f(x) = x + x^2 + \frac{7x^3}{6} + \frac{5x^4}{6},$$

   hence evaluate $\lim_{x \to \infty} f(x)$ for 3 correct digits.

6. Find $\frac{dy}{dx}$ at $x = 0.62$ of the function $y = f(x)$, tabulated below

x	0.4	0.5	0.6	0.7	0.8
y	1.5836494	1.7974426	2.0442376	2.3275054	2.6510818

Interpolation Formulas

1. NEWTONS FORWARD INTERPOLATION FORMULA:

$$y = \varphi(x) = y_0 + u\frac{\Delta y_0}{1!} + \frac{u(u-1)}{2!}\Delta^2 y_0 + \cdots + \frac{u(u-1)\cdots(u-n+1)}{n!}\Delta^n y_0$$

2. NEWTONGREGORY BACKWARD INTERPOLATION FORMULA:

$$y = \varphi(x) = y_n + \frac{u\nabla y_n}{1!} + \frac{u(u+1)}{2!}\nabla^2 y_n + \frac{u(u+1)(u+2)}{2!}\nabla^3 y_n + \cdots + \frac{u(u+1)(u+2)\cdots(u+n-1)}{n!}\nabla^n y_n.$$

3. GAUSS FORWARD INTERPOLATION FORMULA

$$y = \varphi(x) = y_0 + u\Delta y_0 + \frac{u(u-1)}{2!}\Delta^2 y_{-1} + \frac{(u+1)u(u-1)}{3!}\Delta^3 y_{-1} + \frac{(u+1)u(u-1)(u-2)}{4!}\Delta^4 y_{-1} + \cdots$$

4. GAUSS BACKWARD INTERPOLATION FORMULA

$$\varphi(x) = y_0 + \frac{u}{1!}\Delta y_{-1} + \frac{(u+1)u}{2!}\Delta^2 y_{-1} + \frac{(u+1)u(u-1)}{3!}\Delta^3 y_{-2} + \frac{(u+2)(u+1)u(u-1)}{4!}\Delta^4 y_{-2} + \cdots$$

5. STIRLINGS FORMULA

$$y = \varphi(x) = y_0 + \frac{u}{1!}\left[\frac{\Delta y_0 + \Delta y_{-1}}{2}\right] + \frac{u^2}{2!}\Delta^2 y_{-1} + \frac{u(u^2-1)}{3!}\left[\frac{\Delta^3 y_{-1} + \Delta^3 y_{-2}}{2}\right] + \frac{u^2(u^2-1)}{4!}\Delta^4 y_{-2} + \frac{u(u^2-1)(u^2-4)}{5!}\left[\frac{\Delta^5 y_{-2} + \Delta^5 y_{-3}}{2}\right] + \cdots$$

6. NEWTONS GENERAL DIVIDED DIFFERENCES FORMULA

$$f(x) = f(x_0) + (x-x_0)\Delta_0 + (x-x_0)(x-x_1)\Delta_0^2 + \cdots + (x-x_0)(x-x_1)\cdots(x-x_{n-1})\Delta_0^{n-1}$$

Best Wishes

Dr. H. M. Abdelhafez.

University:	Electronic Engineering	Academic Year:	2017-2018
Faculty:	Industrial Elec. &	Exam:	Final Exam
Department:	Control	Date:	December 31st, 2017
Academic level:	2nd Year	Time Allowed:	3 Hours
Course Name:	Control Engineering	No. of Pages:	2
Course Code:	ACE 215	No. of Questions:	5

ANSWER THE FOLLOWING QUESTIONS

Question 1. [15 Marks]

a. Distinguish between On-Off control and Proportional control.

b. Deduce the regulation of glucose in the bloodstream as an example of feedback

c. Reduce the block diagram shown in Fig. 1 to calculate $\frac{C(s)}{R(s)}$.

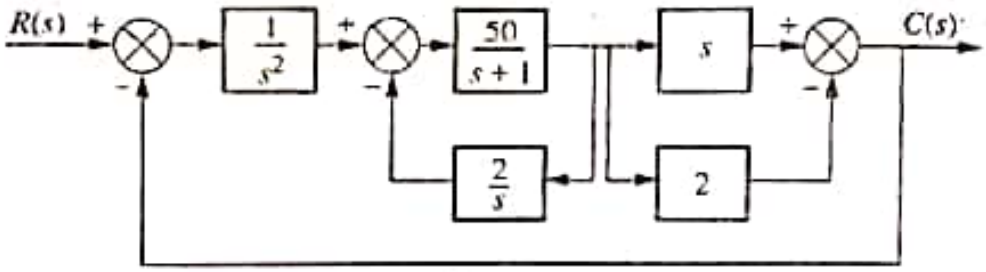


Fig. 1

Question 2. [15 Marks]

Question 3. [15 Marks]:

a) Determine the unit step response of $G_1(s) = \frac{4}{2+s}$ and $G_2 = \frac{0.25}{0.25+0.6s+s^2}$

b) A unity feedback control system whose open loop transfer function is given by: $G_0 = \frac{k}{s(s+1)(s+2)}$. Find the range of "K" for a stable system according to Routh's criterion. Determine the system steady state error for a ramp input $r(t) = 0.1t$

Question 4. [10 Marks]:

Linearize the system shown in Fig. 4 around the stationary working point us and ys and then draw the block diagram of the linearized model. What kind of elements is the transfer function of the linearized model.

Question 5. [15 Marks]:

a) Regarding the system shown in Fig. 5, determine the state space model of the system i.e. determine the matrices A, B, C, D of: $\frac{dx}{dt} = Ax + Bu, y = Cx + Du, with: u = \begin{bmatrix} p1 \\ q2 \end{bmatrix}$ and $y = \begin{bmatrix} q1 \\ p2 \end{bmatrix}$.

b) Consider a unity feedback control system with closed loop transfer function $Gcl = \frac{c}{R} = \frac{ks+b}{s^2+as+b}$. Determine the open loop transfer function Go(s). Show that the steady-state error in the unit-ramp response is given by $ess = \frac{1}{kv} = \frac{a-k}{b}$.

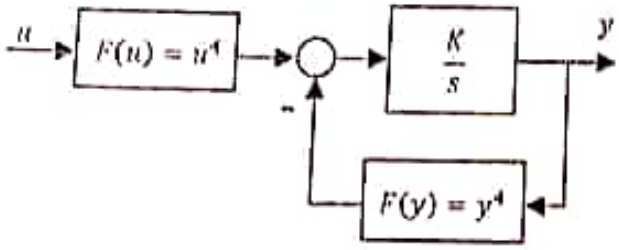


Fig. 4

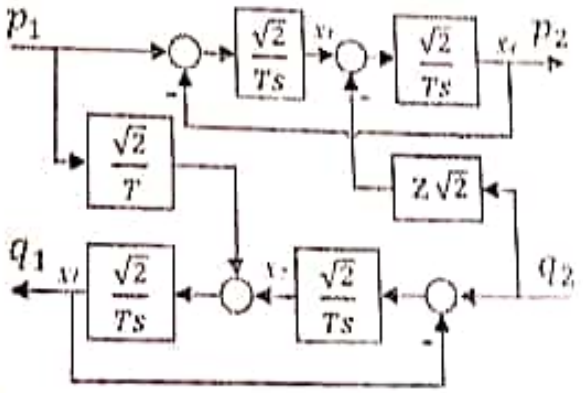


Fig. 5

Best wishes

تانية

University	: *Menoufia*		*Date*	: *01/04/2017*
Faculty	: *Electronic Engineering*		*Time*	: *1 Hours*
Department	: Computer Science and Eng.		*No. of pages*	: *1*
Academic level	: *2nd Year*		*Full Mark*	: *20 Marks*
Course Name	: Database Systems		*Exam*	: *Midterm Exam*
Course Code	: CSE 226		*Examiner*	: *Dr. Mervat Mousa.*

Name: Sec:

Question No. 1 ***(10 Marks)***

a) Explain the difference between internal, and conceptual schemas.
b) Explain the following terms briefly: *attribute, domain, entity, relationship, entity set, relationship set, one-to-many relationship, weak entity*

Question No. 2 ***(10 Marks)***

Assume requirement database of a college contains of a professor teaches zero, one or many classes and a class is taught by one professor, a course may generate zero, one or many classes and a class comes from one course, a class is held in one room but a room has many classes.
a) Draw an Entity Relationship (ER) diagram for the schema of this database. Assume at least one attributes for each entity type.
b) Illustrate the cardinalities and participation constraints. Also, designate a reasonable primary key for each entity type in your model.

Menoufia University
Faculty of Electronics Eng.
Dept. of Comm. and Electronics

2rd Year Examination, 26- 1- 2017
Subject: Electric Circuits
Time: 3 Hours for Two parts

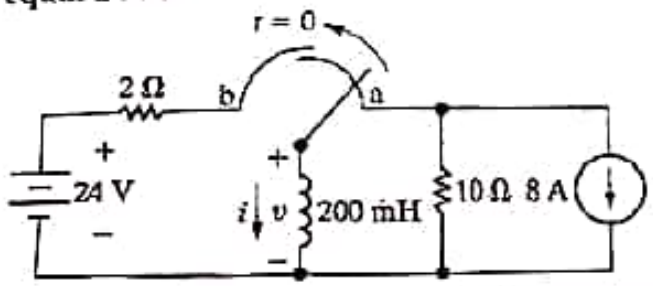
Question 1: (12 Marks)

1-a The switch in the circuit shown in Fig. has been in position a for a long time. At $t = 0$, the switch moves from position a to position b. The switch is a make-before-break type; that is, the connection at position b is established before the connection at position a is broken, so there is no interruption of current through the inductor

a) Find the expression for i(t) for, $t \geq 0$

b) What is the initial voltage across the inductor just after the switch has been moved to position b?

c) How many milliseconds after the switch has been moved does the inductor voltage equal 24V?

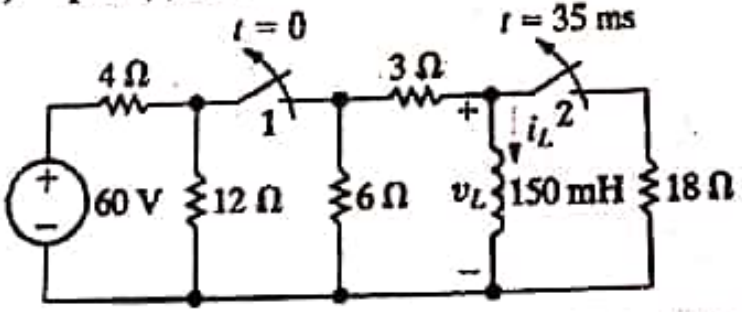


1-b The two switches in the circuit shown in Fig. have been closed for a long time. At t=0, switch1 is opened. Then, 35 ms later, switch2 is opened.

a) Find $i_L(t)$ for $0 \leq t \leq 35ms$ b) Find $i_L(t)$ for $t \geq 35ms$

c) What percentage of the initial energy stored in the 150mH inductor is dissipated in the 18Ω resistor?

d) Repeat(c)for the 3 Ω resistor. e) Repeat(c) for the 6 Ω resistor.



Question 2: (12 Marks)

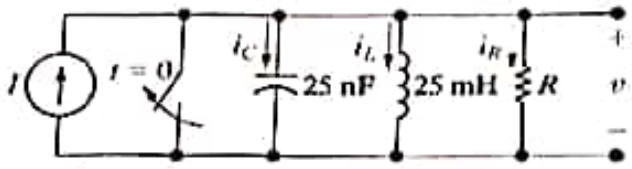
2- a The initial energy stored in the circuit in Fig. is zero. At t = 0, a dc current source of 24 mA is applied to the circuit. The value of the resistor is 400 Ω.

a) What is the initial value of I_L?

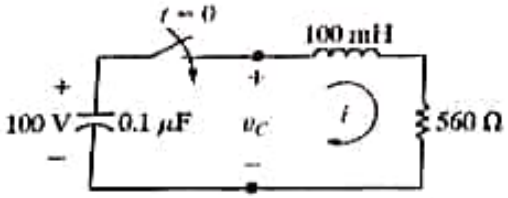
b) What is the initial value of dI_L/dt?

c) what are the roots of the characteristic equation?

d) What is the numerical expression for $I_L(t)$ when $t \geq 0$?

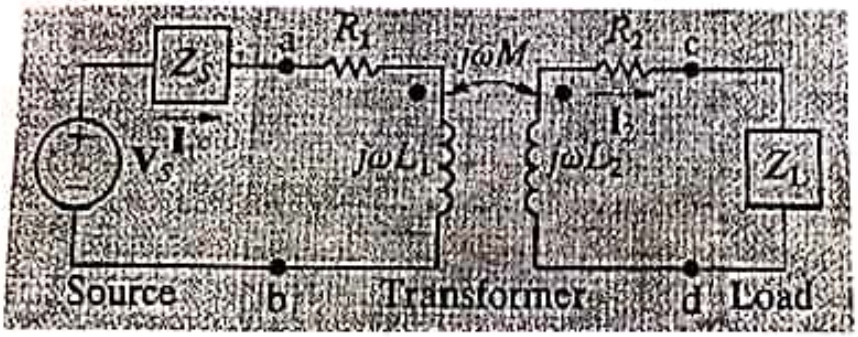


2-b The 0.1μF capacitor in the circuit shown in Fig. is charged to 100V. At t= 0 the capacitor is discharged through a series combination of a 100mH inductor and a 560Ω resistor. a)Find *i(t)* for $t \geq 0$ b)Find $v_c(t)$ for $t \geq 0$



Question 3: (11 Marks)

3-a A linear transformer couples a load consisting of a 360 Ω resistor in series with a 0.25H inductor to a sinusoidal voltage source, as shown. The voltage source has an internal impedance of (184+J0)Ω and a maximum voltage of 245.20 V and it is operating at 800rad/s. The transformer parameters are R_1 = 100 Ω, L_1= 0.5 H, R_2=40 Ω, L_2 = 0.125H, and k=0.4.Calculale(a) The reflected impedance; (b) The primary current and (c)the secondary current



3-b A series combination of a 150 Ω resistor and a 20nF capacitor is connected to a sinusoidal voltage source by a Linear transformer. The source is operating at a frequency of 500 krad/s. At this frequency, the internal impedance of the source is (5 + j16)Ω. The rms voltage at the terminals of the source is 125V when it is not loaded. The parameters of the Linear transformer are R_1 = 12 Ω, L_1= 80 μ H, R_2=50 Ω, L_2 = 500 μH, and M=100 μH

a) What is the value of the impedance reflected into the primary?

b) What is the value of the impedance seen from the terminals of the practical source?

ثانية

Menoufia University Faculty of Electronic Eng. Industrial Electronics & Control Eng. Dept.	Electrical Machines . 2nd -Year Date : 30 /3/2017 Time Allowed : One Hour

Answer the following questions :

1- Define three types of transformers and explain their specifications.

2- A 2500 V/300 V single-phase transformer takes a no-load current of 0.6 A and the core loss is 500 W. Determine the values of the magnetizing and core loss components of the no-load current. Draw to scale the no-load phasor diagram for the transformer.

3- Describe the action of commutator in a d.c. machine .

4- A short-shunt compound generator supplies 100 A at 500 V. If the field resistance, R_f =50Ω, the series resistance, R_{se} = 0.05Ω and the armature resistance, R_a= 0.07Ω, determine the e.m.f. generated.

مع أطيب الأمنيات بالتوفيق والنجاح

جامعة المنوفية	Acd. Year:	2016/2017	Menoufia University		
	Second year	Second term	Faculty of Electronic Engineering		
	Time:	2 Hours	Course	Technical Reports	
	Examiner:	Prof. Nawal El-Fishawy	Date: 8 / 6 / 2017	Course Code:	CEE
	Final Term Exam				
	Attempt all questions.	*One page*	No. of questions: 5		

Question 1

a) Write the major types of documents in technical writing
b) What are the information must be written in the title page?
c) What are the outlines of a formal report?, Give an example for the first 4 items.

********** (7 Marks)

Question 2

a) What are the typical types of technical studies? Discuss two of them in details.
b) What are the types of formal and informal technical document?
c) What are the attributes of good technical writing? Discuss one of them in details.

********** (7 Marks)

Question 3

a) What are the different categories of illustration? Give an example for each of them
b) What are the different types of references? What are the basic information required in a reference citation?
c) What is meant by: plagiarism, purpose and objective of a report.

********** (7 Marks)

Question 4

a) What are the basic ingredients of an abstract and an introduction of a report?
b) What are the types of informal reports? And what are the elements of an informal report?
c) What are the back matter elements of a formal report ?.

********** (7 Marks)

Question 5

a) Write are the different types of reviewing and editing a report?
b) What are the factors must be considered on preparing a presentation for a report?
c) What are the sections of a formal technical presentation?.

********** (7 Marks)

With my best wishes
Prof. Dr. Nawal A. El-Fishawy

ثمانية

Menoufia University
Faculty of Electronic Engineering.
Department of Electronics & Communications.
mid - term Examination

Subject: Electronic Circuits
Date: 26 -3- 2017

Second Year
Time: 30 minutes

الرقم: الفصل: الاسم:

Part1

Answer the following questions

1-a- What is meant by class A amplifier?. What is its maximum efficiency?.
b- What is meant by class B amplifier?. What is its maximum efficiency?.
c- Determine the DC voltages at the bases and emitters of the matched complementary transistors Q_1 and Q_2 in Fig. 1.
Also determine V_{CEQ} for each transistor. Assume $V_{D1}=V_{D2}=V_{BE}=0.7V$.

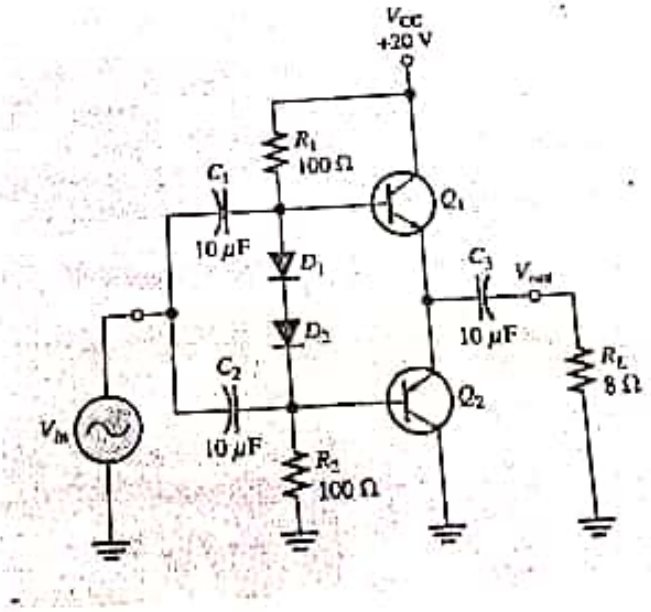


Fig. 1

مع أطيب الامنيات بالنجاح

الجزء الثاني

Menoufia University
Faculty of Electronic Engineering
Department of Electronics and Electrical Communications

Second Year
Time: 90 minutes

Subject: Electronic Circuits
Date: 22 - 5 - 2017

(يرجاء إجابة الجزء الأول من الناحية اليمنى والجزء الثاني من الناحية اليسرى في كراسة الإجابة)

Part1

Answer the following questions

Q1(15 Marks)

1-a- What is meant by class A amplifier? .
Show that its maximum efficiency is 25%.

1-b- Find the maximum ac output power, the dc input power and the maximum efficiency of the amplifier shown in Fig. 1. Also determine the input resistance assuming $\beta_{ac}=50$ and $r'_e=6\Omega$.
If the circuit shown in Fig. 1 is replaced by a Darlington class AB push-pull amplifier with $\beta_{ac}=50$ for each transistor, what will be the input resistance?, and , what is the advantage of that? .

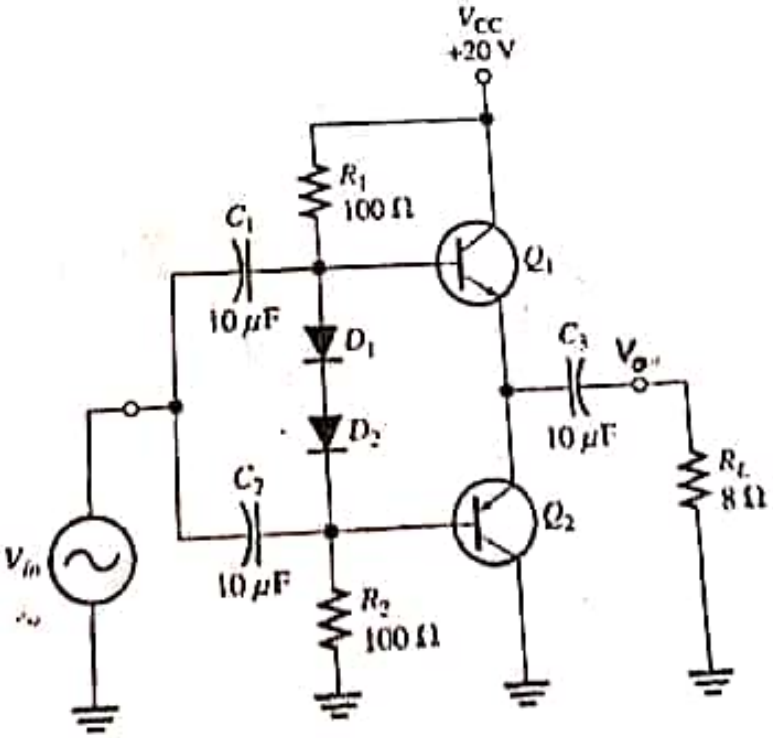


Fig. 1

من فضلك اقلب الورقة

Q2 (15 Marks)

2-a- What is meant by class C amplifier?

A certain class C amplifier transistor is ON for 20% of the input cycle. If $V_{c(sat)}$=0.2V and $I_{c(max)}$=25mA, what is the average power dissipation for maximum output? Determine the efficiency if V_{cc}=15V and the equivalent parallel resistance in the collector tank circuit is 50Ω.

2-b- Define: Amplifier frequency response -

Dominant critical frequencies - Band width.

Q3(15 Marks)

For the BJT amplifier in Fig. 2 determine:

i- The low critical frequencies of the input, output and bypass RC circuits.

ii- The high critical frequencies of the input and output RC circuits.

Draw the Bode plot of the total frequency response and determine the bandwidth. Consider βac=125, r'_e=12Ω, C_{be}=20pF, and C_{bc}=2.4pF.

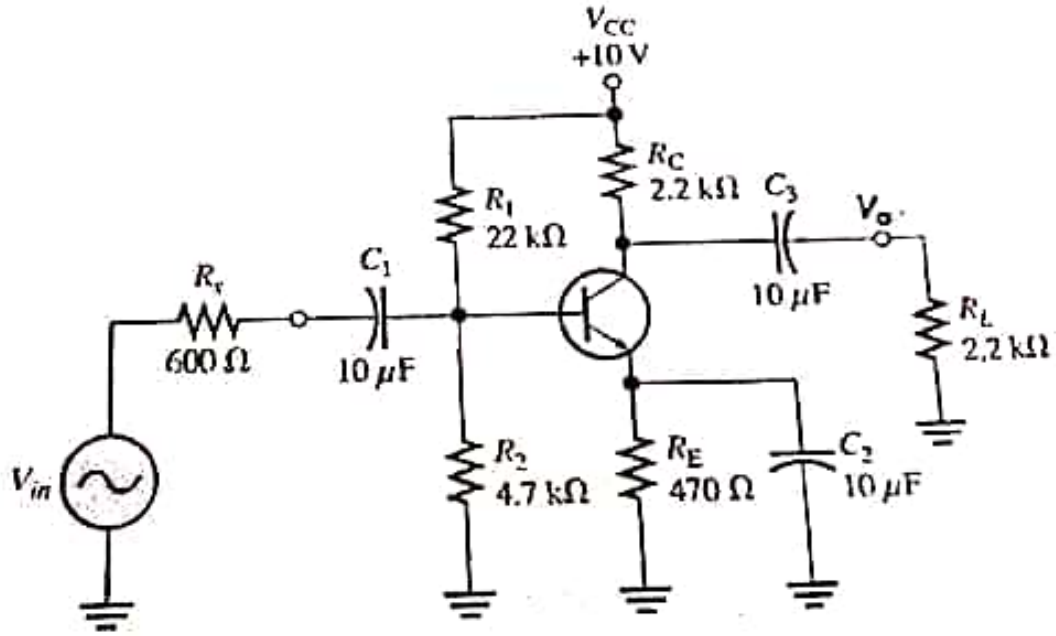


Fig.2

مع أطيب الامنيات بالنجاح والتفوق

University	:	*Menoufia*		*Date*	: *22/05/2017*
Faculty	:	*Electronic Engineering*		*Time*	: *3 Hours*
Department	:	*ECE*		*No. of pages*	: *Two*
Academic level	:	*2nd Year*		*Full Mark*	: *45 Marks*
Course Name	:	*Electronic Circuits*		*Exam*	: *Final Exam*
Course Code	:	*ECE 223*		*Examiner*	: *Dr: Adel El-Fishawy*

Answer all the following four questions

Question No 1 (10 Marks)

1- The output of a particular op-amp increases 8 V in 12 μA due to a unit step input. The slew rate is
(a) 96 V/ μS (b) 0.67 V/ μS (c) 1.5 V/ μS (d) none of these.

2- The output frequency of a certain voltage control oscillator VCO changes from 50 kHz to 65 kHz when the control voltage increases from 0.5V to 1 V. The conversion gain, K of the VCO equals to...

3- In an astable Timer 555 configuration, the external R_1 = 3.3 KΩ. What must R_2 equal to produce a duty cycle of 75 percent?.

4- Negative feedback
(a) increases the input and output impedances (b) increases the input impedance and the bandwidth
(c) decreases the output impedance and the bandwidth (d) does not affect impedances or bandwidth.

5- When negative feedback is used, the gain-bandwidth product of an op-amp
(a) Increases (b) decreases (c) stays the same (d) fluctuates

6- Two IC op-amps are available to you. Their characteristics are listed below. Choose the one you think is more desirable. Op-amp 1: Z_{in} = 10 MΩ, Z_{out} = 75 Ω, A_{ol} = 150,000
Op-amp 2: Z_{in} = 5 MΩ, Z_{out} = 100Ω, A_{ol} = 50,000

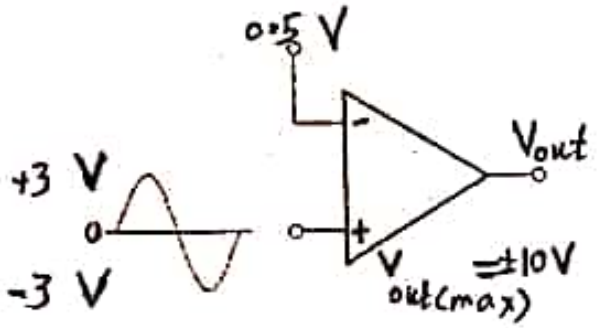
7- A voltage-follower
(a) has a gain of 1 (b) is noninverting. (c) has zero feedback resistor d) has very high input impedance (e) has all of these.

8- An averaging op- amp amplifier has ten inputs. The ratio Rf /Ri must be

a) 10 b) 0.2 c) 0.5 d) 0.1

9- The oscillator (function generator) should contain
a) a sinusoidal oscillator b) a differentiator c) an integrator d) a comparator
e) zero level detector f) all of these g) a) , c) and e)

10- Draw the output voltage waveform for the circuit in the figure shown below with respect to the input.



Question No 2 (10 Marks)

2-A) Calculate the resonant frequency fr of a lead lag circuit with the following values: C1 = C2 = C = 0.01 μf and R1 = R2 = R = 1000 kΩ. Plot the phase response and the frequency response of the given lead-lag circuit. Then, shows to find the quality factor Q and the band width B.W. What is the rms output voltage if an input signal with a frequency equal to fr and with an rms value of 6.0 V is applied to the input of a lead-lag circuit? In addition, show how the mentioned circuit can be used to have Wien bridge oscillator. Draw the oscillator output showing its frequency.

2-B) Draw and discuss in detail the phase shift oscillator showing how the phase condition for oscillations around the closed loop is satisfied.

(10 Marks)

Question No 3

3-A) Draw the internal diagram of the integrated circuit timer 555 and show in details how it can be used as astable mode oscillator. Draw the voltage across the external capacitor ceXt discussing in detail the values of its minimum and maximum & the output voltage of the oscillator. What are the equations of T_H, T_L, T, Duty cycle D and the output frequency fr .

3-B) Draw the block diagram of a phase-locked loop PLL. What is the basic function of a PLL?. What is the difference between the lock range and the capture range of a PLL?. Basically, show how a PLL can track the incoming frequency fi?. What are the basic conditions for PLL to acquire lock. If a frequency modulated FM signal is applied to the input of the PLL circuit using 565 I.C, what will be the PLL output. What will be the output of the VCO part of the PLL if a sinusoidal signal is applied to its input. No equations derivation are required.

(15 Marks)

Question No 4

4-A) Draw and analysis op-amp integrator circuit. Derive the relation between the output voltage V_o in terms of the input voltage V_{in} and circuit parameters. Then, draw an input voltage and the corresponding output voltage.

4-B) Compare between linear and logarithmic signal compression discussing who is better. Draw and discuss a circuit that work as logarithmic amplifier.

4-C) An input signal vi (t) is applied to R and C circuit that connected in series. V_{out} (t) is taken across the capacitor C. Find $V_{out}(\omega)/ V_i(\omega)$ in general. Then, draw the frequency response of the given circuit showing the cutoff frequency fc. Also, derive a condition in terms of the values of the resistance and capacitance that force this circuit to works as an integrator for the input signal.

المقرر: دكتور عادل شاكر الليثاوي

(يرجاء إجابة الجزء الاول من الناحية اليمنى والجزء الثانى من الناحية اليسرى فى كراسة الإجابة)

Part1

Answer the following questions

Q1(15 Marks)

1-a- What is meant by class A amplifier? .
Show that its maximum efficiency is 25%.

1-b- Find the maximum ac output power, the dc input power and the maximum efficiency of the amplifier shown in Fig. 1. Also determine the input resistance assuming β_{ac}=50 and r'_e=6Ω.
If the circuit shown in Fig. 1 is replaced by a Darlington class AB push-pull amplifier with β_{ac}=50 for each transistor, what will be the input resistance?, and , what is the advantage of that? .

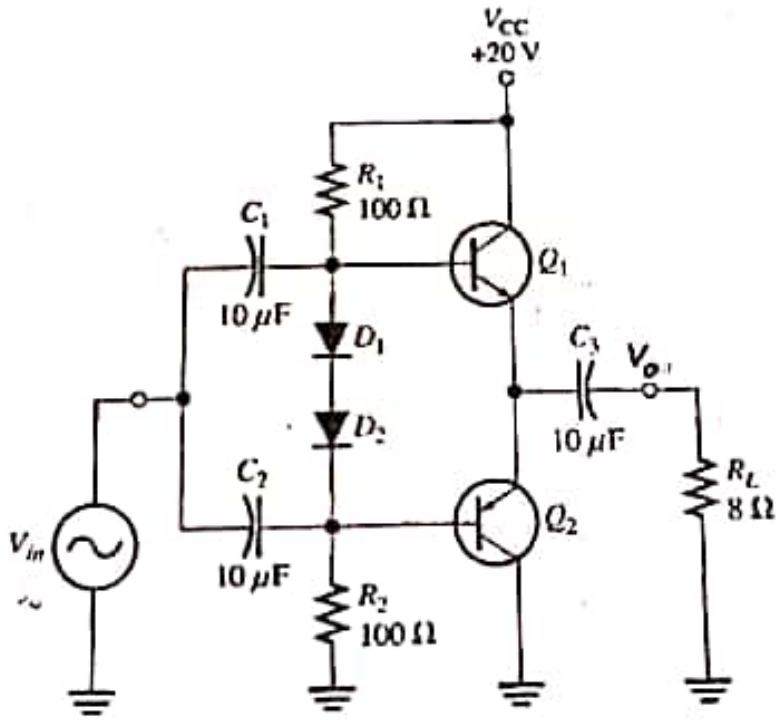


Fig. 1

من فضلك اقلب الورقة

Q2 (15 Marks)

2-a- What is meant by class C amplifier?.

A certain class C amplifier transistor is ON for 20% of the input cycle. If $V_{ce(sat)}$=0.2V and $I_{c(sat)}$= 25mA, what is the average power dissipation for maximum output?. Determine the efficiency if V_{cc}=15V and the equivalent parallel resistance in the collector tank circuit is 50Ω.

2-b- Define: Amplifier frequency response -
Dominant critical frequencies - Band width.

Q3(15 Marks)

For the BJT amplifier in Fig. 2 determine:

i- The low critical frequencies of the input, output and bypass RC circuits.

ii- The high critical frequencies of the input and output RC circuits.

Draw the Bode plot of the total frequency response and determine the bandwidth. Consider βac=125,r'_e=12Ω, C_{be}=20pF, and C_{bc}=2.4pF.

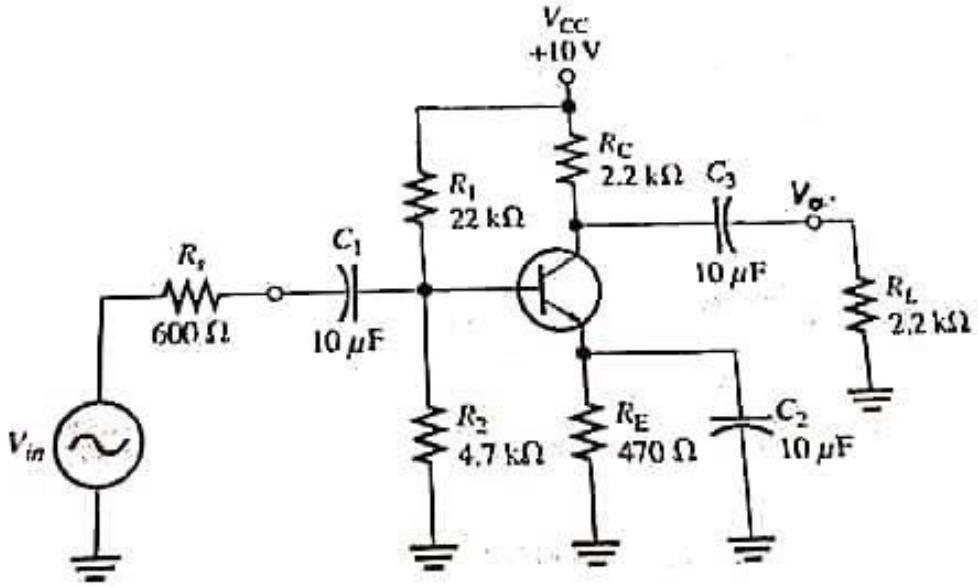


Fig.2

مع أطيب الامنيات بالنجاح والتفوق

كلية الهندسة الكترونية بمنوف
قسم : هندسة الالكترونيات و الاتصالات الكهربية
تاريخ الاختبار : الاحد ٢٠١٧/٣/٢٦

اسم المادة :- دوائر الكترونية الفرقة الثانية
زمن الامتحان : ٩:٣٠٠ ـ ١٠:٣٠

امتحان أعمال السنة الفصل الدراسي الثاني- الجزء الثاني (دكتور عادل شاكر القيشاوي)

Answer all the following questions

1-A)

1. The output of an Op-Amp differentiator is proportional to
(a) the RC time constant. (b) the rate at which the input is changing.
(c) the amplitude of the input (d) answers (a) and (b).

2. A voltage follower
(a) has a gain of 1 (b) is noninverting. (c) has zero feedback resistor d) has very high input impedance (e) has all of these.

3. The open-loop gain A_{ol} of a certain op-amp is 150,000, and the common-mode gain A_{cm} is 0.15. The CMRR in decibels is:
a) 10000 b) 1000000 c) 100000 d) 120 dB e) b) and d).

4. An averaging op- amp amplifier has five inputs. The ratio Rf /Ri must be
a) 5 b) 0.2 c) 0.5 d) 1

5. The rate of change of an integrator's output voltage in response to a step input is set by

(a) the RC time constant. (b) the amplitude of the step input.

(c) the current through the capacitor. (d) all of these.

6. An oscillator differs from an amplifier because the oscillator
(a) has more gain (b) requires no input signal
(c) requires no dc supply (d) always has the same output

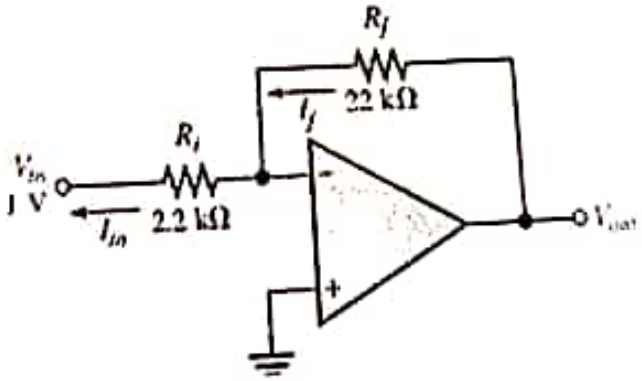
7. In a certain oscillator Av = 50., The attenuation of the feedback circuit must be
(a) 1 (b) 0.01 (c) 10 (d) 0.02

8. In a Wien-bridge oscillator, if the resistances in the positive feedback circuit are decreased, the frequency (a) decreases (b) increases (c) remains the same

9. A phase-shift oscillator has
(a) three RC circuits (b) three LC circuits (c) a T-type circuit (d) a -type circuit

10) Calculate the resonant frequency f_o of the Wien bridge oscillator that has a feedback lead-lag circuit with the following values: C1 = C2 = C= 0.02 μF and R1 = R2 = R = 5.0 kΩ.

1-B) Determine the approximate values for each of the following quantities in the Figure below.
a) Iin b) If c) Vout d) closed-loop gain ACL e) Zin



Menoufia University
Faculty of Electronic Engineering.
Department of Electronics & Communications
mid - term Examination

Subject: Electronic Circuits
Date: 26 -3- 2017

Second Year
Time: 30 minutes

الرقم: الفصل: الاسم:

Part1

Answer the following questions

1-a- What is meant by class A amplifier?. What is its maximum efficiency?.
b- What is meant by class B amplifier?. What is its maximum efficiency?.
c- Determine the DC voltages at the bases and emitters of the matched complementary transistors Q_1 and Q_2 in Fig. 1.
Also determine V_{CEQ} for each transistor. Assume $V_{D1}=V_{D2}=V_{BE}=0.7V$.

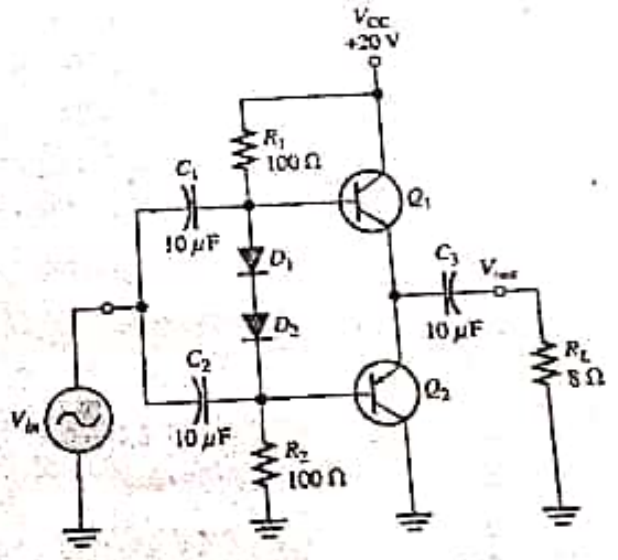


Fig. 1

مع أطيب الامنيات بالنجاح

تانيه

Menoufia university Faculty of Electronic Eng. 2nd year Time: 1 hour	Second Mid Term Exam. Subj: *Technica report writing* Date: 27-3-2017

الاسم : السكشن : الرقم الاكاديمى:

الامتحان في اربع صفحات

1-(A) What are the information must be included in the title page of a report?

1-(B) What are the oulines of a formal report?

2- What are the types of technical studies? Discuss two of them in details.

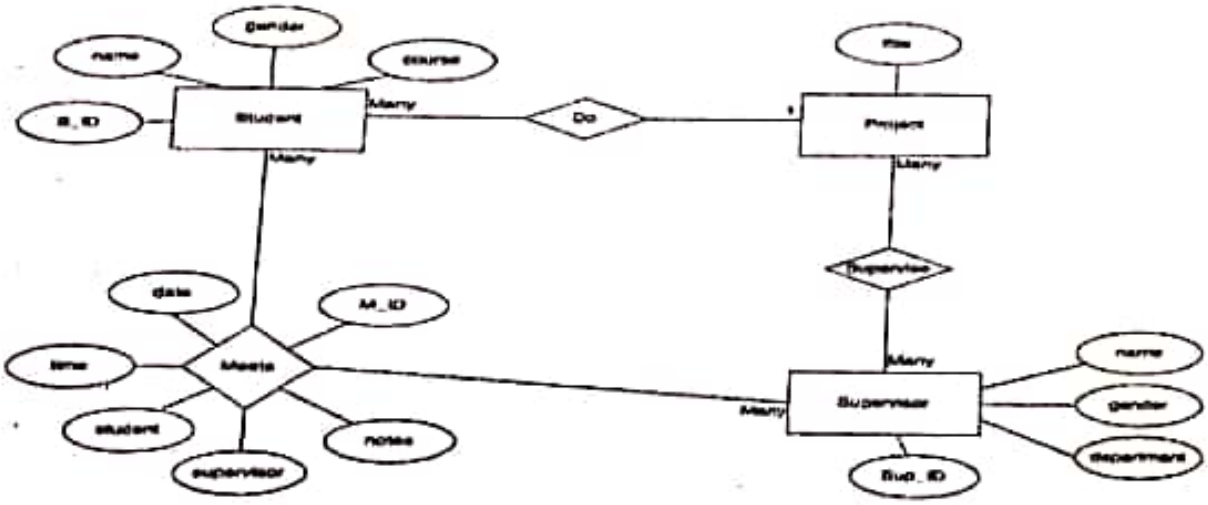
3- Describe the hierarchy of technical document in industry.

4- What are the attributes (criteria) for good technical writing?. Describe one of them in details.

a)

1-Explain the difference between an attribute and value set
2-Explain any 4 types of attributes in ER model with an example
3-What is the difference between the Relation and Relation Scheme

b) The following figure is the ER-diagram of the student project



1- Convert the ER diagram in (b) into UML.
2-Map the ER diagram to a relational database schema (indicate primary and foreign keys).

Question No. 2 **(18 Marks)**

3-Delete three rows from Record
4-Update the tuple with CLASS ATTRIBUTE "SID = 100 to 200.'
5- Insert <'124', 'Sunday 4 pm', null >into class

Question No:3 (16 Marks)

Consider the following relations.

Student(ssn, name, address, major)
Course(code, title)
Registered(ssn ,code)

Express each of the following in SQL and in relational algebra

1- List the name and address of student they registered
2- List the titles of registered courses
3- List the codes of courses for which no student is registered
4-Names of students and the titles of courses they registered
5- List the SSNs of students who are registered for both 'Database Systems' and 'Analysis of Algorithms'.
6-Rename the entity student (STU) and major(MAJ)

Question No: 4: (11 Marks)

Consider a schema diagram with two relations, R (A, B) and S (B, C), where all values are integers. Make no assumptions about key s. Consider the following three relational algebra expressions:

a. $\pi_{A,C}(R \bowtie \sigma_{B=1} S)$

b. $\pi_A(\sigma_{B=1} R) \times \pi_C(\sigma_{B=1} S)$

c. $\pi_{A,C}(\pi_A R \times \sigma_{B=1} S)$

1- Which query from the above are equivalent and why (illustrate by relation example)
2- Write a SQL query to represent the three queries (a, b ,c)

Achieved Intended Learning Outcomes (ILOs):

Question No		Q1			Q2		Q3			Q4	
		a	b	c	a	b	a	b	c	a	b
Achieved ILOs	A- Knowledge & Understanding	1.17	1.16	1.17		1.1		1.14	1.1	1.14	1.16
	B- Intellectual skills	2.1, 2.2, 2.3, 2.7	2.3, 2.7	2.4	2.2	2.2	2.7		2.1	2.2	2.3
	C- Professional and practical skills										
	D- General and transferable skills										

الفرقة الثانية الكهرب

Menoufia University	Time : 60 minutes
Faculty of Electronic Engineering	29/3/2017.
Dept. Industrial electronics and Control Eng.	Microcontrollers
MID-TERM Exam (2nd Year)	(ACE 225)

الفصل : الاسم :

Answer the following question:

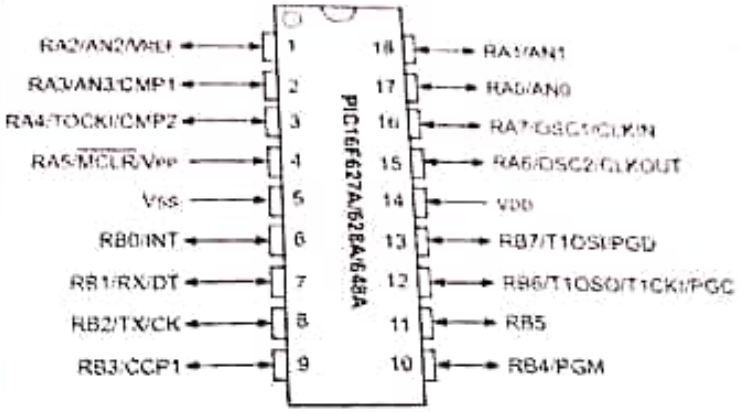
Q1) For the following PIC microcontroller:

a) What are the basic connections for external 4MHz oscillator? With values

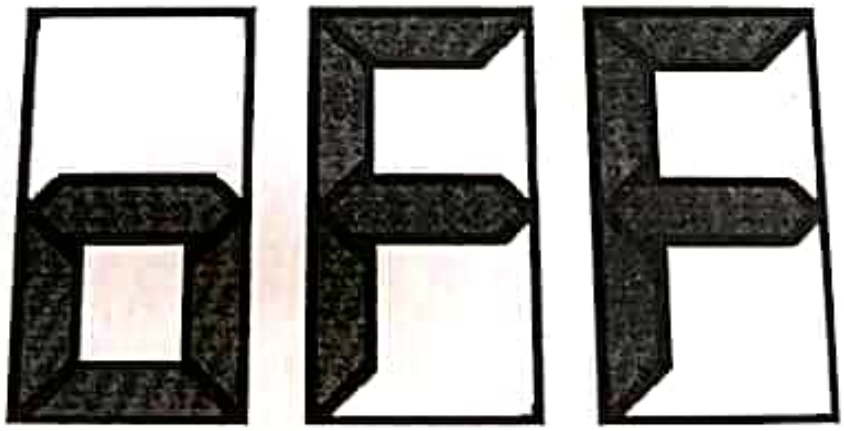
b) What are the required connections and setting for 4MHz internal oscillator? With values

c) How to connect push buttons as input? With values

d) How to connect LED as output with values?



Q2) Write the program to display "OFF" word in the following three 7-Segments.



Then draw the microcontroller with required connections.

Best Wishes....

Instructions Answer all the following questions.

1. First Question

Given that $u(x, y) = 4xy^3 - 4x^3y + x$.

(a) Verify that the given function u is harmonic in the entire complex plane.

(b) Find v, the harmonic conjugate function of u.

(c) Form the corresponding analytic function $f(z) = u + iv$.

(d) Find $\frac{d}{dz}[f(z)]$.

(e) Evaluate $\frac{d}{dz}[f(z)]$ at $z = 1 + i$.

2. Second Question

If $z^5 = -32$. Then,

(a) Find all solutions (roots) of the given equation.

(b) Express the equation roots first in polar form and then in exponential form.

3. Third Question

Find the general solution of the following equations.

(a) $(\frac{\partial z}{\partial x})^2 - 2\frac{\partial z}{\partial x}\frac{\partial z}{\partial y} + (\frac{\partial z}{\partial y})^2 = e^{x-2y} + \cos(2x + y)$.

(b) $2xy\frac{\partial z}{\partial x} + (x^2 + y^2)\frac{\partial z}{\partial y} = 2(x - y)^2 z$.