



Note:- Answer all questions

<p>Q1:</p>	<p>Evaluate two of the following limits:</p> <p>(1) $\lim_{x \rightarrow 0^+} \frac{\sqrt{x^2 - 1}}{\sec^{-1} x}$ (2) $\lim_{x \rightarrow 1^+} \frac{\sin^{-1} x^2}{(\sin^{-1} x)^2}$ (3) $\lim_{x \rightarrow 2^-} \frac{\sqrt{4 - x^2}}{\sqrt{6 - 5x + x^2}}$</p>	<p>12 m</p>
<p>Q2:</p>	<p>Find Domain, Range, Asymptotes of the function $y = \frac{x^2 - 4}{x - 1}$</p>	<p>10 m</p>
<p>Q3:</p>	<p>Find $\frac{dy}{dx}$ of two of the following functions:</p> <p>(1) $y = \tan^{-1} \sqrt{x^2 - 1} + \operatorname{sech}^{-1} x$ (2) $y = (\sinh^{-1} x)^{\operatorname{sech} x}$</p> <p>(3) $y = \left[\frac{\sqrt{x+5} (x-1)}{(x+3)^2 \sqrt[5]{(x-2)^2}} \right]^3$</p>	<p>10 m</p>
<p>Q4:</p>	<p>Find $\frac{dy}{dx}$ of the following parametric equations:</p> <p>$y = 2 \sin t$, $x = 3 \cos t$</p>	<p>5 m</p>
<p>Q5:</p>	<p>Evaluate Two of the following integrals:</p> <p>(1) $I = \int \frac{dx}{\sqrt[3]{1-7x}}$</p> <p>(2) $I = \int \tanh^{-6} x \cdot \operatorname{sech}^4 x \, dx$</p> <p>(3) $I = \int x^2 e^x \, dx$</p>	<p>15 m</p>
<p>Q6:</p>	<p>A rock blasted vertically up word, it reaches a high of $s(t) = 160t - 16t^2$ after t seconds, find:</p> <p>(1) Its speed and acceleration at any time?</p> <p>(2) How high does the rock go?</p>	<p>8 m</p>

10

Q6\ A- Write the following in C language :-

$$Y = \frac{5 + A}{D} - \frac{B}{C}$$

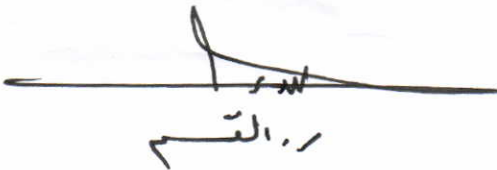
$$Z = \frac{4(X + 5Y)2}{X - Y}$$

B- Trace and write the outputs of the following program:-

```
Main ( )
{
int a,b,c;
int d,e;
d=e=30
a=4;
b = --a+1;
c = ++a + b++ ;
Printf("\nA=%d B=%d C=%d", a,b,c);
c+ = --a + --b;
Printf("\nA=%d B=%d C=%d", a,b,c);
a=b= c-(a*b);
d /= (a+b);
e= e/(a+b);
Printf("\nD=% E%e" , d ,e);
}
```

***** (10 Marks)

Best Wishes



Taqwa F. Al Temimi

10

University of Diyala
College of Engineering
Software & Computer Eng. Dept.

Final Examination
2011-2012
2nd Trail

Class: 1st stage
Subject: C languages
Time: 3 hours
Date: 5/ 9/2012

Note:- Attempt only five questions.

Q1\ Write C program to create the following array with 25 elements :

h	e	l	l	o
e	h	l	o	l
l	o	h	e	l
l	l	o	h	e
o	l	l	e	h

***** (10 Marks)

Q2\ Write a program with three short strings, about 6 characters each, and use strcpy to copy one, two, and three into them. Concatenate the three strings into one string and print the result out 10 times.

***** (10 Marks)

Q3\A- Explain with examples the different in use break and continue statements, then show the advantage of using them.

B- Write a simple program before and after using goto statement with explaining the Differences between them.

***** (10 Marks)

Q4\ Select the right answers for the following:-

- 1- Mouse , keyboard and scanner are (a. input devices b.output devices c.processors).
- 2- Function used to read character string is (a.scanf b.gets c. getchar)
- 3- Performing arithmetic operations such add,sub..etc called (a. procrssing b. storng c. inputting).
- 4- Output of strcmp(str1,str2,4) if str1=HARD WORK, str2=hard work is: (a. 0 b. 1 c. -1).
- 5- The unit responsible for controlling the operations of all other units of a computer system (a. Contol Unit b. ALU Unit c. Memory Unit).

***** (10 Marks)

Q5\ Write a program to merge X [10] and Y [10] in Z[n] ,with cancelling the similar elements.

***** (10 Marks)



University of Diyala
College of Engineering
Dep. of Comp. & Soft. Eng.
Final Exam/2nd Attempt



Class: 1st stage
Subject: Prin. Comp. Science
Year: 2011-2012
Time: 3 hours
Date: 13/9/2012

Note:- Answer Five Questions Only, included Q1 Necessarily.

Q1	<p>A: Answer either by True or False then correct the errors (answer 10 only):-</p> <ol style="list-style-type: none"> The length of the extension name is 4 letter. It's easy to use (ALT, CTRL, ESC) in any name of the DOS OS. To add photo to the word document file, it's done from view menu. To make line under a word in word document using the button . B Changing font is done from insert menu. It's easy to run office file of version 2007 on version 2003. The extension of Excel file is XLS, XLSX. Cannot run source file written in C language. To run DOS OS from Windows OS by the following steps start → run → DOS. Cannot run power point files without the program itself. The order (CD..) is used to return directly to the drive C. VB language is used to design operating systems. <p>B: Show the steps of dividing the HDD of size 80 G.B. (Only the steps of dividing HDD).</p>	20%
Q2	<p>Explain the following briefly:-</p> <ol style="list-style-type: none"> How to change version of word document from 2007 to the lowest versions? Give the full name of the following letter (http, ftp, wan, lan, wlan, www, https) and what is the protocols and for what purposes is used? 	20%
Q3	<p>A: by using VB language write a program to change the properties of text font using the properties (bold, italic, underline) to change this using 3 command box and 1 textbox with drawing the design of the form.</p> <p>B: What are the differences in the way of formatting Windows XP and Window 7? and what are the characteristics of the device to accept Window 7?</p>	20%
Q4	<p>A) Explain the Network? B) What is Internet?</p>	20%
Q5	<p>Define Bad Sector? Show the procedures to fix it? Explain the construction of H.D.D. with schematics?</p>	20%
Q6	<p>Explain with draw, the procedure of clear CMOS program?</p>	20%

Good Luck

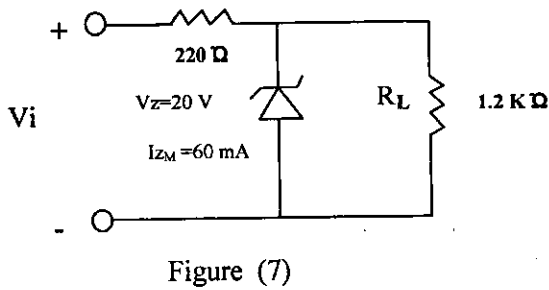
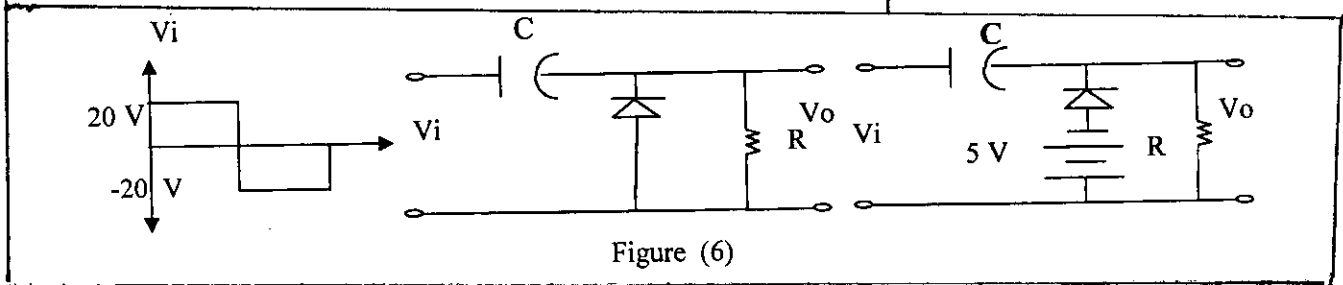
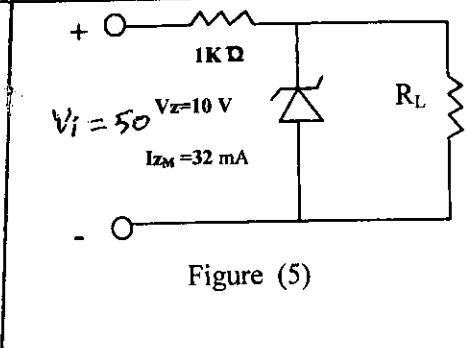
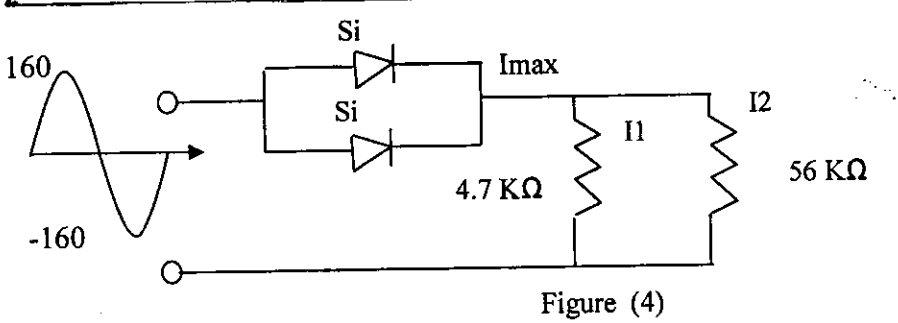
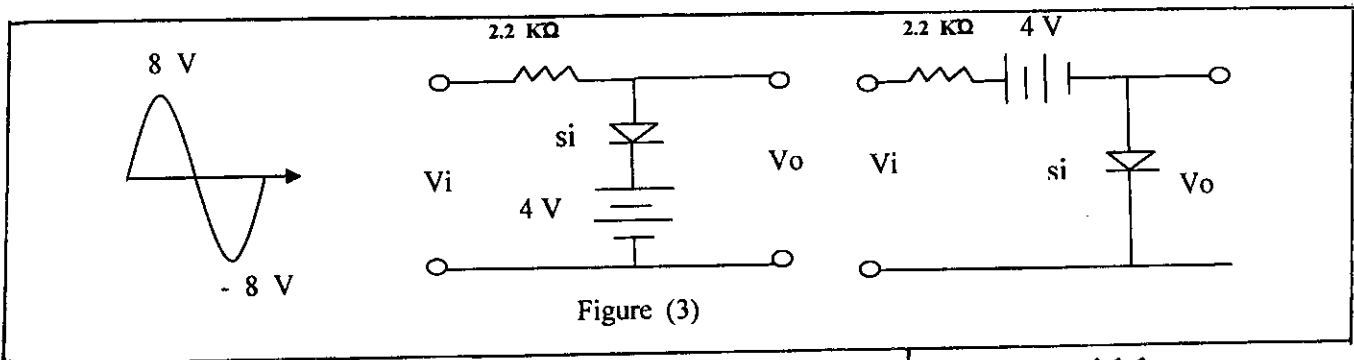
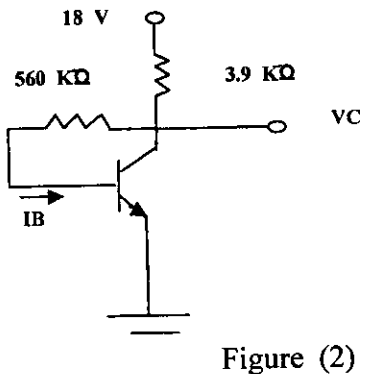
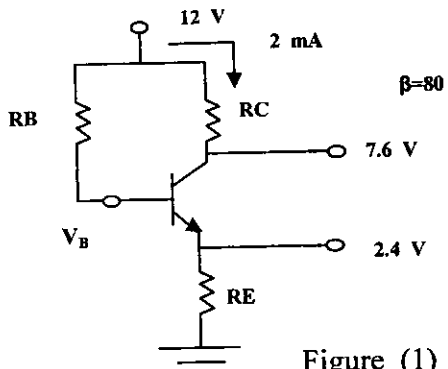
Head of Dep.:

Name: Saad A. Salman

Lecturer:

Name: Mohammed F. Mohammed

Attached Figures and Notes



University of Diyala
College of Engineering
Dep. of Comp. & Soft. Eng.
Final Exam/2nd Attempt



Class:1st stage
Subject: Electronic Engineering
Year: 2011-2012
Time:3 hour

Note:-Answer Six Questions Only

Q1	For figure (1) find:- a-RC b-RE c-RB d-VCE e-VB	10 Marks
Q2	For figure (2) if $V_C = 8V$ find:- a-IC b-IB c- β d-VCE	10 Marks
Q3	A)Sketch V_o for each network of figure (3) for the input shown:- B)Define:- a-P-type b-LED c- Insulator d-Conduction Band	10 Marks
Q4	For figure (4) :- a-Given $P_{zmax} = 14 \text{ mw}$ for each diode of figure (4), determine the maximum current rating of each diode? b-Determine I_{max} , I_1 , I_2 for $V_{imax} = 160V$? c-Determine current through each diode at V_{imax} ? d-If only one diode were present, determine the diode current and compare to maximum rating?	10 Marks
Q5	For the network of figure (5), determine the range of R_L and I_L that will result in V_{RL} being maintained at 10 V?	10 Marks
Q6	Sketch V_o for each network of figure (6) for the input shown:-	10 Marks
Q7	Determine the range of V_i that will maintain the zener diode of figure (7) in the "ON" state:-	10 Marks

Good Luck

Head of Dep.:

Name: Saad A. Salman

Lecturer:

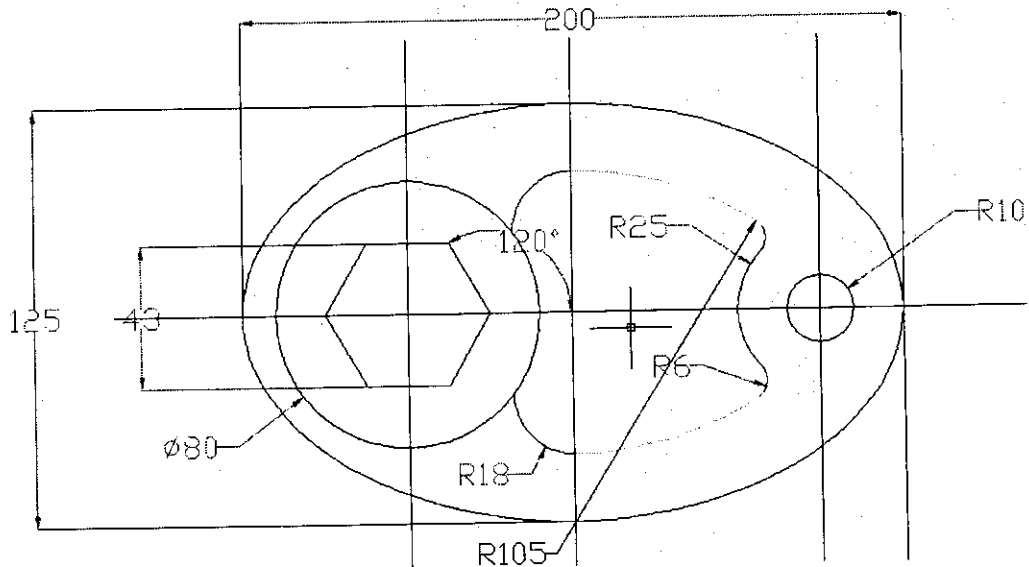
Name: Maather A. Rahman



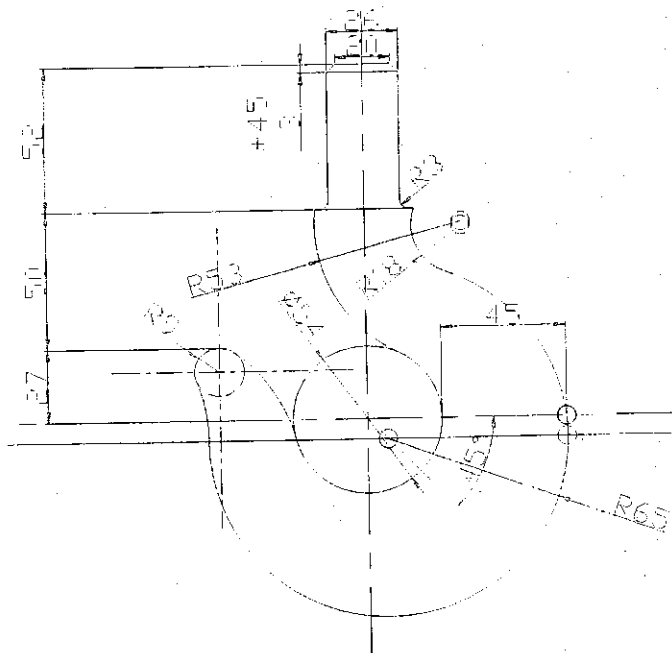


Answer one question only

Q1- Draw the following using graphic geometry by Auto cad.



Q2- Draw the following fig. by Auto cad .



good luck

Head of Dep.:
Name : Dr. Saad A. Salman

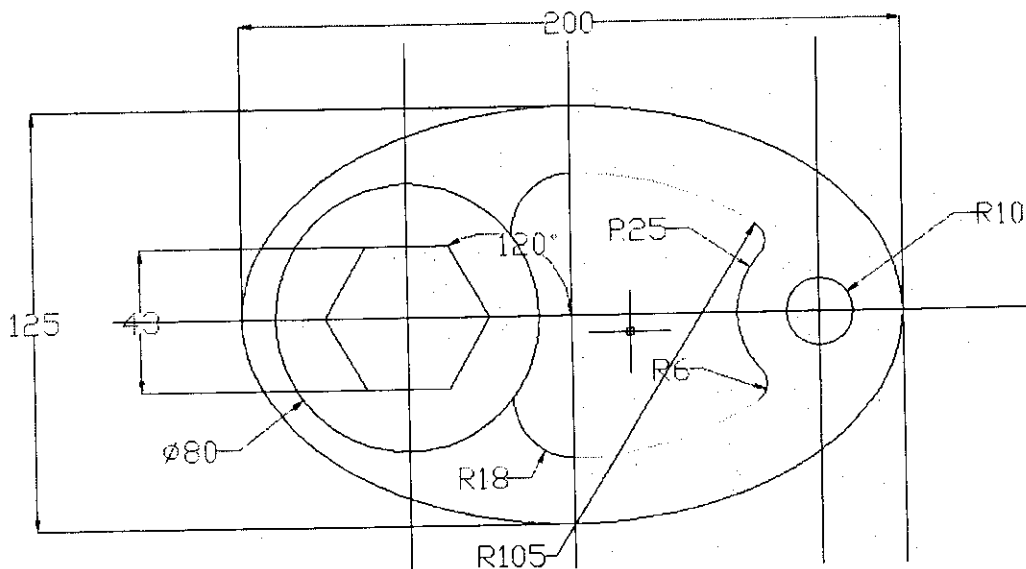
Lecturer:
Name : Nayyef alqayssi



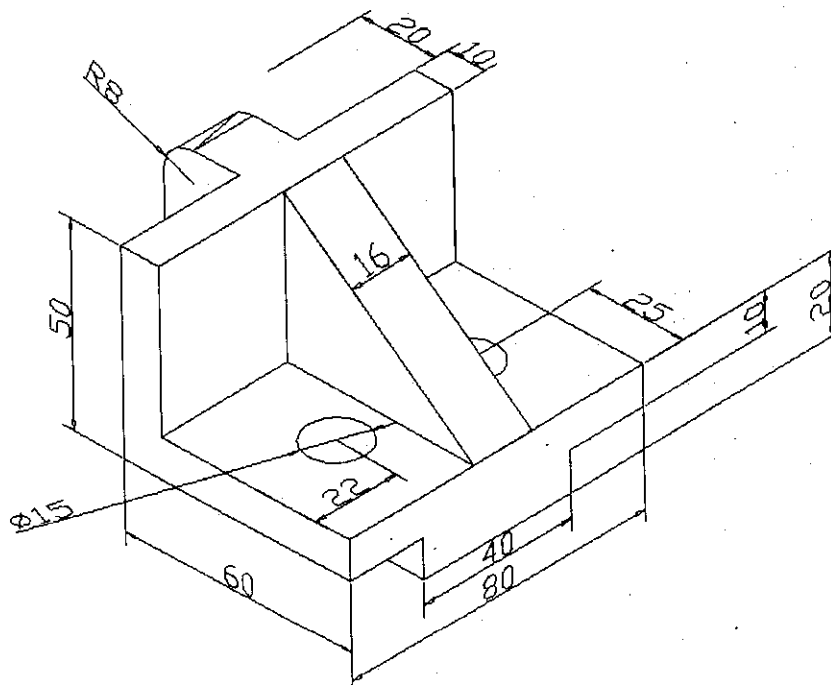


Note:- Answer all questions, all question have equal weight.

Q₁- Draw the following using graphic geometry.



Q₂- Draw the three projection of the following figure in the first angle of projection.



Head of Dep.:
Name : Dr. Saad A. Salman

Lecturer:
Name : Nayyef alqayssi

	<p>b-Which of following instructions has two bytes: MOV A,B ,STA 2050H, MVI A,20H</p> <p>c-What happen if SUB A instruction is executed. Specify the status of Z and CY flag.</p> <p>d-Explain TRAP signal</p> <p>e-Explain the function of ALE and $\overline{IO/M}$ signals?</p> <p>f-How many address lines are used to identify an I/O port in isolated I/O and memory mapped I/O?</p>													
Q5	<p>1)Write program to generate a continuous square wave with period of 500 MSec , assume clock period is 325 ns, and used bit Do to output the square wave?</p> <p>2)Write instructions to add three arrays, first array has six elements stored at memory locations starting at 2000H, second has five elements stored at memory locations starting at 2020H, third has seven elements stored at 2050H, stored results at consecutive memory locations starting at 3000H?</p> <p>First array 10h,20H,05H,33H,04H,22H Second array 01H, 02H, 03H, 04H,05H Third array 00H,03H,0AH,06H,11H,22H,09H</p>	10 Marks												
Q6	<p>1)Calculate value of 16 bit number to obtain delay of 1 Sec if clock period of system is 1 MSec?</p> <table border="0"> <thead> <tr> <th>Mnemonics</th> <th>T-states</th> </tr> </thead> <tbody> <tr> <td>LXI H,16 bit</td> <td>10</td> </tr> <tr> <td>LOOP:DCX H</td> <td>6</td> </tr> <tr> <td>MOV A,L</td> <td>4</td> </tr> <tr> <td>ORA H</td> <td>4</td> </tr> <tr> <td>JNZ LOOP</td> <td>10/7</td> </tr> </tbody> </table> <p>2)Write program to add two hexadecimal numbers 7AH, 46H , store sum at memory location XX98H, flag status at XX97H?</p>	Mnemonics	T-states	LXI H,16 bit	10	LOOP:DCX H	6	MOV A,L	4	ORA H	4	JNZ LOOP	10/7	10 Marks
Mnemonics	T-states													
LXI H,16 bit	10													
LOOP:DCX H	6													
MOV A,L	4													
ORA H	4													
JNZ LOOP	10/7													

Good Luck

Head of Dep.: 

Name: Dr. Saad A. Salman.

Lecturer:..... 

Name:Maather A. Rahman

University of Diyala
 College of Engineering
 Dep. of Comp. & Soft. Eng.
 Final Exam/2nd Attempt

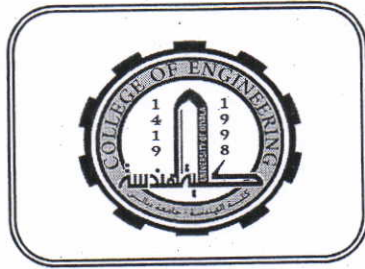


Class: Second stage
 Subject: System Programs
 Year: 2011-2012
 Time: 3 hour

Note:-Answer Five Questions Only

<p>Q1</p>	<p>1) A set of eight readings is stored in memory starting at location XX50H. Write program to check whether a byte 40H exist in the set. If it does stop checking and display its memory location; otherwise output FFH ? Data (H) 48, 32, F2, 38, 37, 40, 82, 8A</p> <p>2)A set of eight data bytes is stored in the memory locations starting at 2080H. Write instructions to check each data byte for bits D0, D1. If D0 or D1 is 1 reject data byte; otherwise store the data byte at memory locations starting at XX60H? Data (H) 80, 52, E8, 78, F2, 67, 53, 62</p>	<p>10 Marks</p>
<p>Q2</p>	<p>1)Write program to add the following data bytes stored in memory location starting from XX60H, and display the sum at the output port 00H if the sum does not generate carry . If a result generate carry stop addition , display 01H at output port . Data (H) 37, A2, 14, 78, 79</p> <p>2)Write instructions to determine number of zeros elements in set of six data bytes stored at memory locations started at XX20H, store result at D register? Data 20H,00H,30H,00H,55H,88H</p>	<p>10 Marks</p>
<p>Q3</p>	<p>1) Specify the output at port F2H? MVI A,92H ORA A JP OUTPRT XRA A OUTPRT:OUT F2H HLT</p> <p>2)Write program to read data from two input ports 01H, 02H. And these data check result if any bits (D0, or D1) SET , save 55H in memory location 2000H; otherwise save 77H in memory location 2000H?</p>	<p>10 Marks</p>
<p>Q4</p>	<p>1) Write program to calculate number of odd and even elements in block of memory contain 100 elements, start at address 2000H, store result at memory locations 4000H, 4001H?</p> <p>2)Answer five only from following questions:- a-In the opcode fetch cycle, what are control signals are asserted by the 8085 to enable the memory buffer?</p>	<p>10 Marks</p>





Note: Answer 4 question only, all questions have equal weight .

Q ₁	<p>A/Define ten of the following:- 1-Median,2-Mutually exclusive events, 3-Complement, 4-Sample space, 5-Mode, 6-Bayes theorem,7-Raw data,8- Dependent event, 9-Mathematical expectation,10-Descriptive statistic,11- Population,12-Point estimate, 13-Uniform distribution,14-Geometric distribution, 15-Negative binomial distribution.</p> <p>B/ If X is binomially distributed, prove that : $P(X) = \frac{\lambda^x e^{-\lambda}}{x!}$ (poison distribution).</p>
Q ₂	<p>Find the expected number of biologist on a committee of size 4 selected at random from 5 biologists and 4 chemists.</p>
Q ₃	<p>Find the probability that in a family of four children there will be. Assume the probability of a male birth is $\frac{1}{2}$.</p> <p>a- At least one boy. b- At least one boy and at least one girl</p>
Q ₄	<p>A batch of parts contain 100 parts from a local supplier of tubing and 200 parts from a supplier of tubing in the next state. If four parts are selected randomly and without replacement.</p> <p>a- What is the probability they are all from the local supplier b- What is the probability that two or more parts in the sample are from local supplier. c- What is the probability that at least one part in the sample is from the local supplier.</p>
Q ₅	<p>The <i>mean</i> inside diameter of a sample of 200 washers produced by a machine is 0.502 inches and the <i>standard deviation</i> is 0.005 inches. The purpose for which these washer are intended allows a maximum tolerance in the diameter of 0.496 to 0.508 inches, otherwise the washer are considered defective. Determine</p> <p>a- The percentage of defective washers produced by the machine. b- Number of defective washer.</p>

Good Luck

Head of Dep.:

Name : Dr. Saad A. Salman

Lecturer:

Name : Nayyef alqayssi



University of Diyala
 College of Engineering
 Dep. of Comp. & Soft. Eng.
 Final Exam/2nd Attempt



Class:2nd stage
 Subject: Data Structure
 Year: 2012-2013
 Time:3 hour
 Date: 6 / 9 / 2012

Note:-Answer All Questions

Q1	<p>A- Answer One: 1- Write a procedure to add one element to circular linked list? 2- Write a procedure to delete one element from circular linked list? B- Convert the infix expression into postfix notations using two stacks: $C + E - F \text{ OR } (G * 2 \wedge H) - K / M \text{ AND } R \wedge Y$</p>	20%																				
Q2	Write a Program for Circular Queue representation and its operation?	20%																				
Q3	Write a program to read a string and print it in reverse order by using stack?	20%																				
Q4	<p>The following figure shows an array representation for a binary tree:</p> <p>1 2 3 4 5 6 7 8 9 10 15 16 17 18 19 20 30 31</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>L</td><td>M</td><td>X</td><td>A</td><td>-</td><td>-</td><td>B</td><td>S</td><td>R</td><td>-</td> <td>-</td><td>N</td><td>-</td><td>T</td><td>P</td><td>F</td><td>-</td> <td>-</td><td>K</td><td>-</td> </tr> </table> <p>A- Draw this tree? B- Traverse this tree in Postorder? C- Traverse this tree in Preorder D- Cut the right branch to get a new tree (root and left branch), represent the new tree using record representation with two pointers? E- Represent the remaining tree (right branch) using record representation with three pointers?</p>	L	M	X	A	-	-	B	S	R	-	-	N	-	T	P	F	-	-	K	-	20%
L	M	X	A	-	-	B	S	R	-	-	N	-	T	P	F	-	-	K	-			
Q5	<p>Answer One:- A- VAR BOB: array [1...4, 1...9, 1...6, 1...8] of integer Calculate address element BOB [3, 7, 4, 5], by using rows & columns methods, if BA=415? B- Write a procedure to delete one element from queue by using record implementation?</p>	20%																				

Good Luck

Head of Dep.:

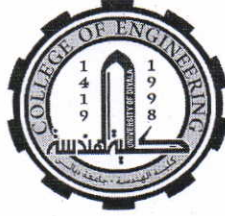
Name: Saad A. Salman

Lecturer:

Name: Mohammed F. Mohammed



University of Diyala
College of Engineering
Dep. Of Computer & S/W Emg.
Final Exam/2nd Attempt



Class: 2nd stage
Subject: S/W Engineering
Year: 2012-2013
Time: 3 hour

Note:- Answer Five Questions Only

10 degrees for each question

Q1-A\ What are the questions that derived from risk data obtained by surveying experienced S\W project ?

B- Explain the useful properties of mathematics in S\w development?

Q2-A\ Explain the questions are asked and answered when requirement analysis activity commences?

B- What are the questions that asked when modern computer – based system are built?

Q3-A\ Define and explain Spiral model, then describe in detail task regions with sketch?

B- Explain in in brief the (definition , development , support) phase ?

Q4-A\ What are the Software characteristics ?

B- Explain the step that taken to mitigate risk when project management develop strategy for reducing turnover ?

Q5-A\ What is the Formal methods? Why is it important? What are the steps?

B- What are the elements of computer-based system?

Q6-A\ Compare between incremental model and prototyping model?

B- What are the challenges for S\W engineering ?

Good Luck

Head of Dep.:
Laad

Name: Dr.....Saad.....A. Salman

Lecturer:
Wafiq

Name: ...S. Saad ...A. F. lch

Attached Figures and Notes

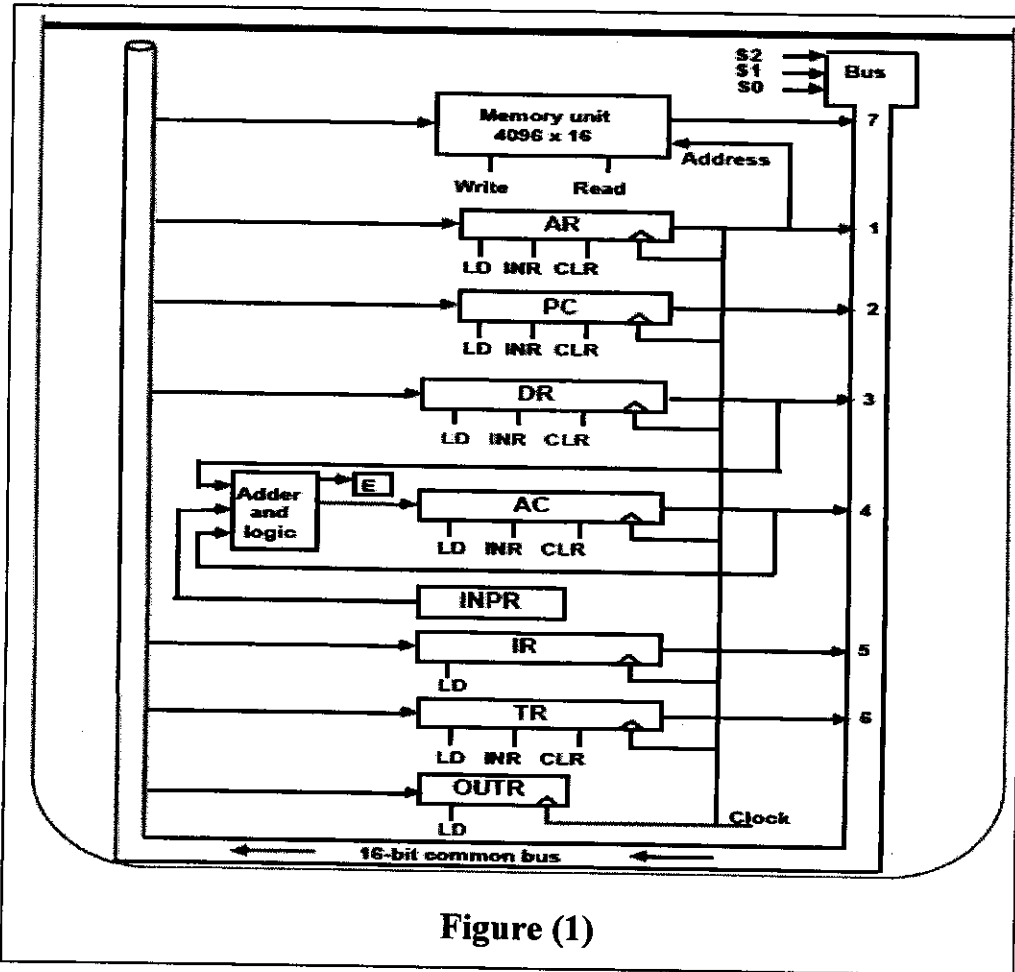


Figure (1)

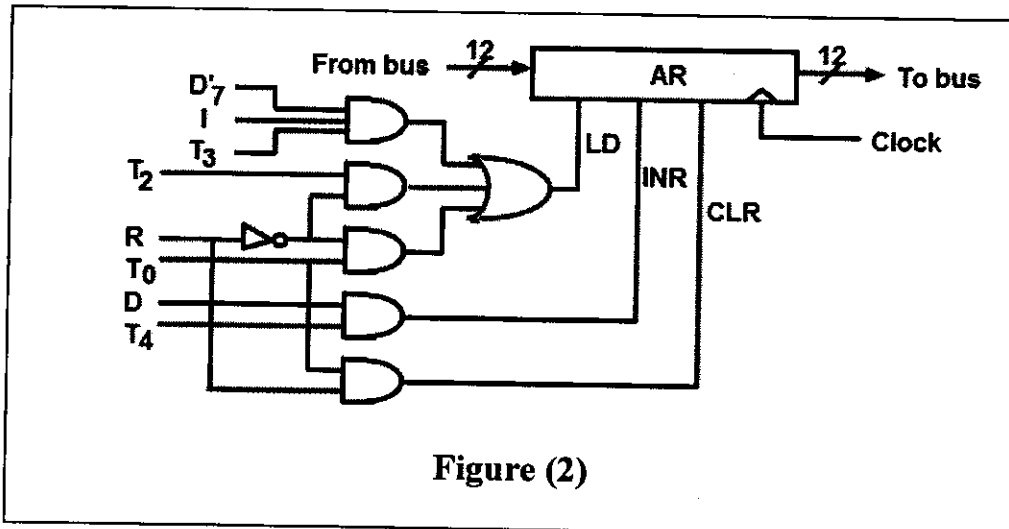


Figure (2)

University of Diyala
 College of Engineering
 Dep. Of Computer &
 Software Engineering
 Final Exam/2nd Attempt



Class: 2nd stage
 Subject: Computer System
 Architecture
 Year: 2011-2012
 Time: 3 hour
 Date: 6-9-2012

Note:-Answer All Questions

Q1	<p>Explain in brief Five of the Following:</p> <p>(1) Micro operation. (2) Machine Instruction. (3) PSW. (4) Main Memory. (5) Magnetic Tape. (6) Cache Memory.</p>	10 Marks
Q2	<p>(a) A 4 ways set associative cache memory can accommodate a total of 1024 words from main memory size of 128k*8, calculate the cache memory size.</p> <p>(b) Construct 4k x 16 RAM using 1k x 8 memory.</p>	10 Marks
Q3	<p>(a) List the types of Auxiliary memory and briefly explain the Second-Generation of the Optical Disc.</p> <p>(b) Draw the control unit of a basic computer with 16k x 20.</p>	10 Marks
Q4	<p>(a) The logical address space on a computer system consists of 128 seg, each seg can have up to 32 pages of 4k words in each. Physical memory consists of 4k blocks and 4k words in each. Formulate the logical and physical address formats.</p> <p>(b) Write a program of the following equation using three address Instructions type. $X = \frac{A - B + C(D * E - F)}{G + H * K}$</p>	10 Marks
Q5	<p>(a) Explain the circuit showing in Figure (1).</p> <p>(b) In the basic computer, each instruction cycle consists of phases, list these phases.</p>	10 Marks
Q6	<p>(a) Draw the flowchart of the interrupt cycle.</p> <p>(b) Explain in Brief the circuit showing in Figure (2).</p>	10 Marks

Good Luck

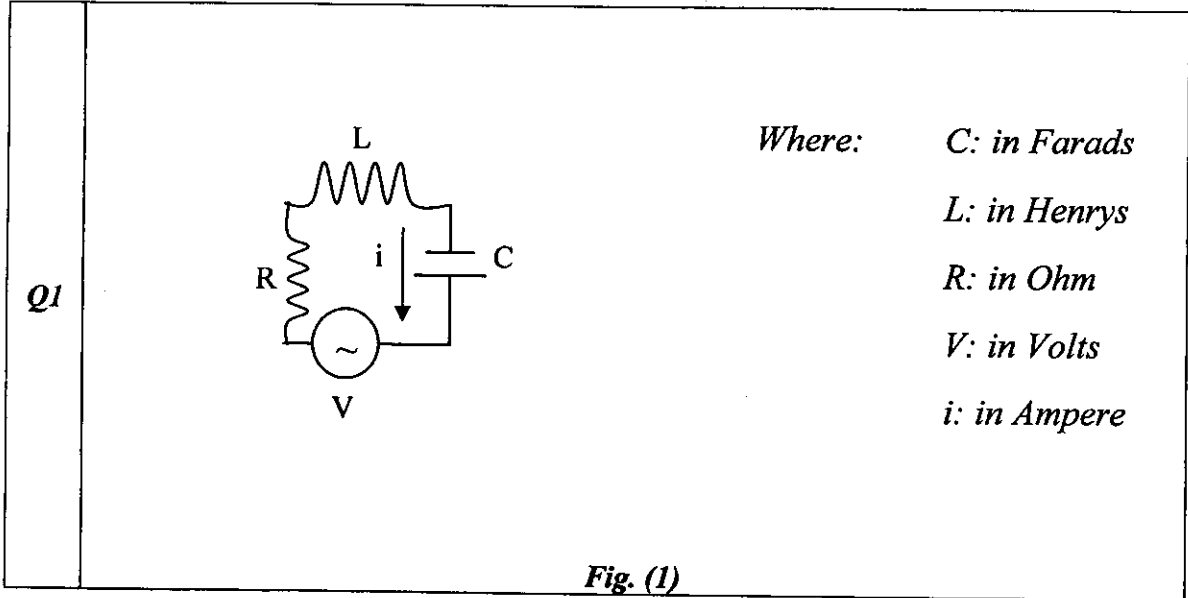
Head of Dep.:

Name: Dr. Saad A. Salman

Lecturer:.....

Name MSc, Zeyad Assi Obaid

Attached Figures and Notes





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Note:-Answer 5 Questions Only

Q1	<p>A simple electrical circuit of (R-L-C) is shown in figure(1):- The general D. Eqn. of this system is:</p> $L \frac{d^2i}{dt^2} + R \frac{di}{dt} + \frac{1}{C} i = \frac{dv}{dt}$ <p>Find i (t) if:</p> <p>a) $R = 0$, $\frac{1}{LC} = \omega^2$, $V = \text{Constant}$</p> <p>b) $R = 0$, $\frac{1}{LC} = \omega^2$, $V = u \sin \alpha t$, Where u & α are constants</p> <p>c) $R = 50$, $L = 5$, $C = 9 \times 10^{-6}$, $V = \text{Constant}$</p>	20%
Q2	<p>A) Consider the inhomogeneous difference equation with $X(0)=2$: $X(n-1)-1.2X(n)=1.1$</p> <p>B) Find with draw: $\oint_C \frac{\sin Z}{Z^2+4} . dZ$</p> <p>Where C is the path: 1) $Z+2i =1$ 2) $Z-2i =1$ 3) $Z =4$</p>	20%
Q3	<p>Show that the function $U = \cosh 2x \cos 2y$ is harmonic, use the C-R equations to deduce the harmonic conjugate function V that makes $W(x,y)$ is an analytic function and express W as $W(Z)$.</p>	20%
Q4	<p>An electrical system represented by the following Difference Equation: $Y(n) - 0.75Y(n-1) + 0.125 Y(n-2) = F(n)$</p> <p>Where: $F(n) = \begin{bmatrix} 1 & n = 0, 1 \\ 0 & \text{out of width} \end{bmatrix}$</p> <p>Find:-</p> <p>1) Sketch the Block Diagram (Input/Output Diagram) which represent the system.</p> <p>2) Find the solution for the output response.</p> <p>3) Find $Y(0)$ & $Y(1)$.</p>	20%
Q5	<p>Use Simpson's Rule with $n=8$ to approximate $\int_{0.5}^{1.5} 5 \frac{dX}{X^{-4}}$.</p>	20%
Q6	<p>Solve Using Range-Kutta method to solve $Y' = X^2 + Y$ for $h = 0.1$, $n=6$, $Y(0) = -1$ and calculate the total absolute error percentage?</p>	20%

Good Luck

Head of Dep.:

Name: Saad A. Salman

Lecturer:

Name: Mohammed F. Mohammed

Attached Figures and Notes

Q1

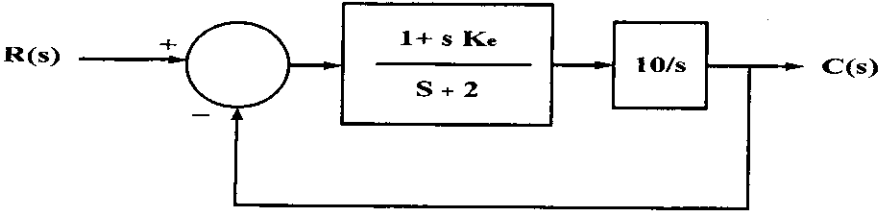


Fig.(1)

Q2

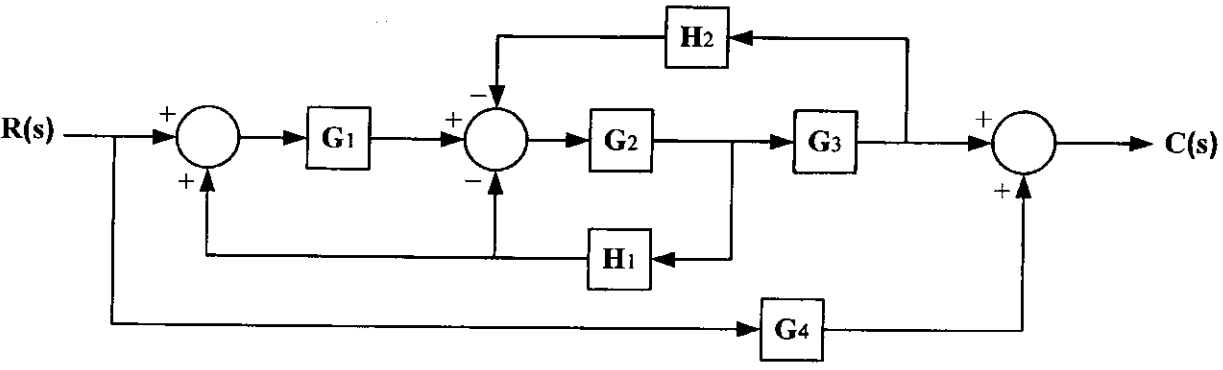


Fig.(2)

University of Diyala
 College of Engineering
 Dep. of Computer & Software Eng.
 Final Exam. / 2nd Attempt



Class: 3rd stage
 Subject: Control *OK*
 Year: 2011-2012
 Time: 3 hour
 Date: 6 - 9 - 2012

Note:-Answer Five Questions Only

Q1	For the control system shown in fig.(1). Determine the value of error rate constant (K_e) so that the damping ratio is (0.6). Determine the values of settling time (t_s), maximum overshoot (M_p), and steady state error (e_{ss}), if the input is unit ramp.	10 marks
Q2	Draw the signal flow graph and find the transfer function $C(s)/R(s)$ for the system shown in fig.(2) by using Mason's rule.	10 marks
Q3	A unity-feedback control system has an open-loop transfer function $G(s) = \frac{K(s+13)}{s(s+3)(s+7)}$. Using Routh stability criterion, find the range of (K) for the system to be stable. If ($K=1$), find all the poles of the closed-loop transfer function, where one of them ($s=-7.2$)	10 marks
Q4	Construct the bode plots on a semi log graph paper for a unity feedback system whose open-loop transfer function is given by: $G(s) = \frac{10}{s(s+1)(0.02s+1)}$	10 marks
Q5	Plot the root-locus pattern for a system whose forward path transfer function $G(s)H(s) = \frac{K(s+1)}{s(s+2)(s^2+2s+5)}$.	10 marks
Q6	State equation of a system is given by: $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & 0 \\ 3 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ Obtain the state transition matrix $\Phi(t)$.	10 marks

With Best Wishes

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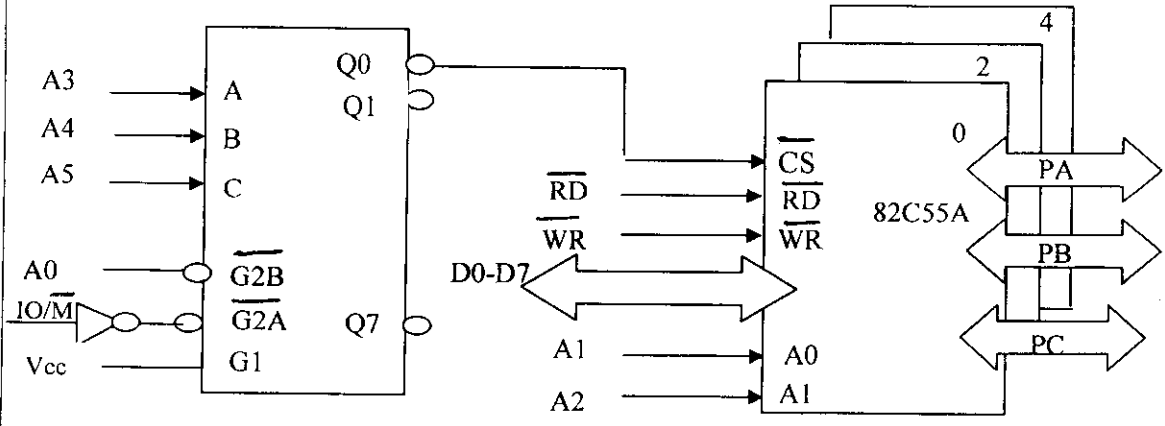
Head of Dep.: *Dr. Saad A. Salman*

Lecturer: *Dr. Saad A. Salman*

Q4 1)What value must be written to the control register of the 82C55A to configure the device such that both port A , port B are configured mode 1, input operation, if control register is at I/O address 0100H. Write instructions that will load it with control word?
 2)If control register is at memory address 00100H in (Q4-1). Write instructions to load it with control register?
 3)Array called table has six byte elements. By using string instructions write program to search for first element not equal 20H?

10
Marks

Q5 Answer three only from following questions:-
 1)Write instructions to read the contents of counter 2 on the fly. The count is to be loaded into AX register. Assume that the 82C54 is located at I/O address 40H?
 2)Write instructions that sums EAX, EBX, ECX, EDX if carry occurs place logic 1 in EDI if no carry occur place 0 in EDI. The sum should be in EAX register?
 3)For circuit shown below:-



10
Marks

For PPI 4, if PA configured as output, PC and PB configured as input, all these ports operate in mode 0. Write program that input data from port B, port C, Find difference (port C – port B) output result at port A, assume A6, A7 equal to zero?
 4)Write instructions to find maximum elements from array called table has seven bytes elements?

Good Luck

Head of Dep.:
 Name: Dr. Saad Al-Qaisy.....

Lecturer:
 Name: ...Maather A. Rahman.....

2/2

University of Diyala
College of Engineering
Dep. of Computer & Software Eng.
Final Exam / 2nd Attempt



Class: Third stage
Subject: Microprocessor
Year: 2011-2012
Time: 3 hour
Date: 3 - 9 - 2012

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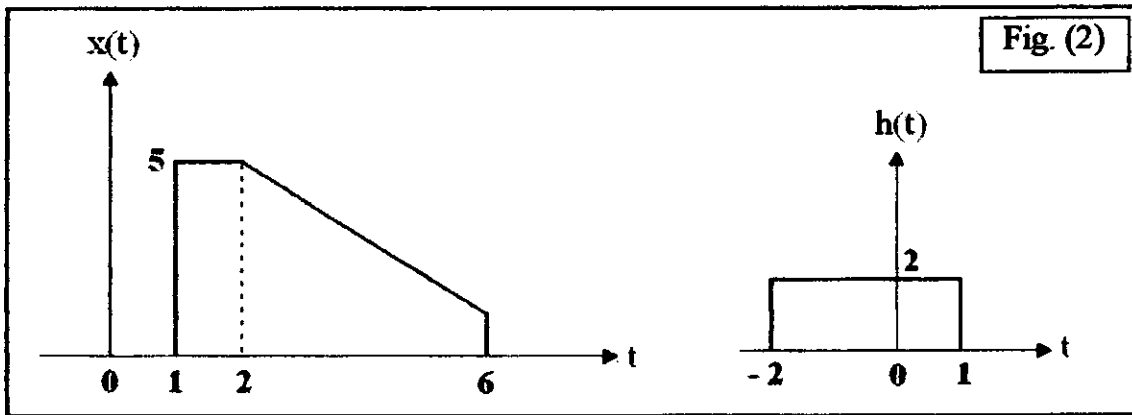
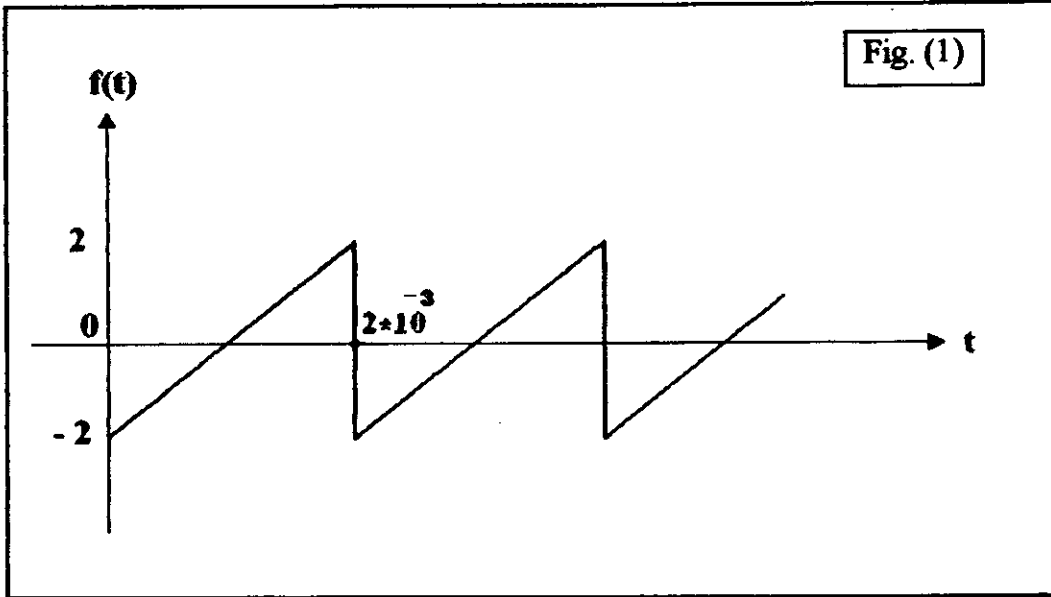
Note:-Answer Four Questions Only

Q1	<p>Answer ten only from following questions:-</p> <ol style="list-style-type: none"> 1-If 8086 running at 10 MHz inserts two wait states in to all I/O bus cycle, what is the duration of a bus cycle in which byte of data is being output? 2-What is wait state? 3-Does the 8088 have multiplexed address/data bus or independent address/data bus? 4-List the memory control signals together with their active logic levels that occur when a word of data is written to memory address A0000 in minimum mode 8086 microcomputer system? 5-Describe what the CMPSB instruction accomplish? 6-Which type of I/O has the disadvantage that part of the address space must be given up to implement I/O ports ? 7-List the 8-bit register that are used for register addressing? 8-Explain the difference between MOV BX,DATA instruction and MOV BX,OFFSET DATA instruction? 9-Describe the operation of PUSHD 4? 10-Write instruction to invert the left most 10 bits of BX register without changing the right most six bits? 11-What does a REP prefix accomplish, and what type of instructions is used with? 12-In machine language instructions, what information is specified by MOD field? 	10 Marks
Q2	<ol style="list-style-type: none"> 1)Design an interfacing circuit . For memory system of 8 KB of ROM and 256 KB of RAM using 4KB ROM & 64 KB RAM chips to 8088 microprocessor . Rom end at FFFFFH, Ram start at 80000H? 2)Write program which will check the data word at location 0080H:2000H and 0080H:2002H. The greater of these two words should be saved in location 0080H:2004H? 3)Write program which will fill of the locations between 0080:0500 and 0080:05FF with byte 99H? ? 	10 Marks
Q3	<ol style="list-style-type: none"> 1)Write instructions that input the byte data from input port A0000, B000. Add these values together save sum in memory location called SUM? 2)Write instructions to check I₀ (first line input from eight lines) at input port 8000H, until it equal logic 1? 3)If table array has five word elements, copy contents of this array to another array called table1 in reverse order? 	10 Marks

A TABLE OF BESSEL FUNCTIONS

Bessel Functions of the First Kind, $J_n(\beta)$

β	J_0	J_1	J_2	J_3	J_4	J_5	J_6	J_7	J_8	J_9	J_{10}
0.0	1.00										
0.2	0.99	0.10									
0.4	0.96	0.20	0.02								
0.6	0.91	0.29	0.04								
0.8	0.85	0.37	0.08	0.01							
1.0	0.77	0.44	0.11	0.02							
1.2	0.67	0.50	0.16	0.03	-0.01						
1.4	0.57	0.54	0.21	0.05	-0.01						
1.6	0.46	0.57	0.26	0.07	0.01						
1.8	0.34	0.58	0.31	0.10	0.02						
2.0	0.22	0.58	0.35	0.13	0.03	-0.01					
2.2	0.11	0.56	0.40	0.16	0.05	0.01					
2.4	0.00	0.52	0.43	0.20	0.06	0.02					
2.6	-0.10	0.47	0.46	0.24	0.08	0.02	-0.01				
2.8	-0.19	0.41	0.48	0.27	0.11	0.03	-0.01				
3.0	-0.26	0.34	0.49	0.31	0.13	0.04	0.01				
3.2	-0.32	0.26	0.48	0.34	0.16	0.06	0.02				
3.4	-0.36	0.18	0.47	0.37	0.19	0.07	0.02	-0.01			
3.6	-0.39	0.10	0.44	0.40	0.22	0.09	0.03	-0.01			
3.8	-0.40	0.01	0.41	0.42	0.25	0.11	0.04	0.01			
4.0	-0.40	-0.07	0.36	0.43	0.28	0.13	0.05	0.02			
4.2	-0.38	-0.14	0.31	0.43	0.31	0.16	0.06	0.02	-0.01		
4.4	-0.34	-0.20	0.25	0.43	0.34	0.18	0.08	0.03	-0.01		
4.6	-0.30	-0.26	0.18	0.42	0.36	0.21	0.09	0.03	0.01		
4.8	-0.24	-0.30	0.12	0.40	0.38	0.23	0.11	0.04	0.01		
5.0	-0.18	-0.33	0.05	0.36	0.39	0.26	0.13	0.05	0.02	-0.01	
5.2	-0.11	-0.34	-0.02	0.33	0.40	0.29	0.15	0.07	0.02	-0.01	
5.4	-0.04	-0.35	-0.09	0.28	0.40	0.31	0.18	0.08	0.03	-0.01	
5.6	0.03	-0.33	-0.15	0.23	0.39	0.33	0.20	0.09	0.04	0.01	
5.8	0.09	-0.31	-0.20	0.17	0.38	0.35	0.22	0.11	0.05	0.02	-0.01
6.0	0.15	-0.28	-0.24	0.11	0.36	0.36	0.25	0.13	0.06	0.02	-0.01
6.2	0.20	-0.23	-0.28	0.05	0.33	0.37	0.27	0.15	0.07	0.03	-0.01
6.4	0.24	-0.18	-0.30	-0.01	0.29	0.37	0.29	0.17	0.08	0.03	0.01
6.6	0.27	-0.12	-0.31	-0.06	0.25	0.37	0.31	0.19	0.10	0.04	0.01
6.8	0.29	-0.07	-0.31	-0.12	0.21	0.36	0.33	0.21	0.11	0.05	0.02
7.0	0.30	0.00	-0.30	-0.17	0.16	0.35	0.34	0.23	0.13	0.06	0.02
7.2	0.30	0.05	-0.28	-0.21	0.11	0.33	0.35	0.25	0.15	0.07	0.03
7.4	0.28	0.11	-0.25	-0.24	0.05	0.30	0.35	0.27	0.16	0.08	0.04
7.6	0.25	0.16	-0.21	-0.27	0.00	0.27	0.35	0.29	0.18	0.10	0.04
7.8	0.22	0.20	-0.16	-0.29	-0.06	0.23	0.35	0.31	0.20	0.11	0.05
8.0	0.17	0.23	-0.11	-0.29	-0.11	0.19	0.34	0.32	0.22	0.13	0.06
8.2	0.12	0.26	-0.06	-0.29	-0.15	0.14	0.32	0.33	0.24	0.14	0.07
8.4	0.07	0.27	0.00	-0.27	-0.19	0.09	0.30	0.34	0.26	0.16	0.08
8.6	0.01	0.27	0.05	-0.25	-0.22	0.04	0.27	0.34	0.28	0.18	0.10
8.8	-0.04	0.26	0.10	-0.22	-0.25	-0.01	0.24	0.34	0.29	0.20	0.11
9.0	-0.09	0.25	0.14	-0.18	-0.27	-0.06	0.20	0.33	0.31	0.21	0.12
9.2	-0.14	0.22	0.18	-0.14	-0.27	-0.10	0.16	0.31	0.31	0.23	0.14
9.4	-0.18	0.18	0.22	-0.09	-0.27	-0.14	0.12	0.30	0.32	0.25	0.16
9.6	-0.21	0.14	0.24	-0.04	-0.26	-0.18	0.08	0.27	0.32	0.27	0.17
9.8	-0.23	0.09	0.25	0.01	-0.25	-0.21	0.03	0.25	0.32	0.28	0.19
10.0	-0.25	0.04	0.25	0.06	-0.22	-0.23	-0.01	0.22	0.32	0.29	0.21





Note: Answer only five questions.

Q1: A given FM transmitter is modulated with sinusoidal input $f(t)=10 \cos 200\pi t$ and the modulation index is (4.4). The no modulation power is 10 watt across 50 Ω resistive load . Determine :-

ok

- 1- The modulation constant (K_f).
- 2- The ratio of the average power in the sum of the third and fourth order sidebands to the power in all remaining sidebands excluding carrier.
- 3- The bandwidth of the modulated signal (use significant sidebands).

Q2: A transmitter transmits an AM/DSB-LC signal. The modulating signal is a periodic signal given as shown in Fig.(1) and the carrier signal is $6 \cos (4\pi * 10^5 t)$ volt. If the modulating signal is band-limited to 2 kHz , draw the spectrum of the modulated signal .

Q3:/ A) For PM signal with 75 kHz deviation, if the input signal-to-noise ratio is 15 dB and the frequency of the modulating single tone signal (f_m) is 10 kHz .

- 1- Find SNR_o at demodulator output.
- 2- Calculate the modulation index, maximum frequency deviation and the bandwidth of the modulated signal if f_m is doubled .

(B) Twenty five signals, fifteen of them each one has 3 KHz bandwidth, and the others ten each one has bandwidth of 4.5 kHz, all the signals are FDM/ DSB-SC multiplexed then RF modulated by using (AM/DSB-LC) modulator.

- 1- Calculate minimum multiplexing and final transmission bandwidths.
- 2- Calculate multiplexing and final transmission bandwidths if 0.6 kHz guard band is allowed between each two signals and below the first signal.

Q4: Evaluate the convolution ($x(t) \otimes h(t)$) for the functions shown in Fig.(2) .

Q5: A message signal $m(t)=4 \cos(200\pi t)+ 2 \cos(800\pi t)$ modulated a carrier signal $c(t)=6\cos(2*10^4 \pi t)$ by using AM/DSB-SC modulation :

- 1- Write an expression for the modulated signal .
- 2- Draw the amplitude spectrum of the modulated signal .
- 3- Verify Parseval power theorem in finding the sidebands power.
- 4- Calculate total power, transmission efficiency and the transmission bandwidth.

Q6: The auto-correlation function of the signal $v(t)$ is $R_v(\tau)=0.25 \exp (-2|\tau|)$. Find the energy of the signal $v(t)$ in the in the frequency range (1 – 10) Hz .

Note : 12 Marks for each question

Good luck

Examiner : Mr. Dheyaa Tareq

10



Note:-Answer Five Questions Only

OR

Q1	Consider the control system with forward-path transfer function $G(s) = \frac{(1-s)}{s(s+0.8)}$ and PID controller transfer function $G_c(s)$. Using a Ziegler-Nichols tuning rule, determine the values of (K_p) , (T_i) , and (T_d) . Also obtain the transfer function of the PID controller.	10 marks
Q2	(a) Sketch the block diagram of digital interface input system. (b) Explain the conditional delay loop in data conditional transfer techniques.	10 marks
Q3	Consider that the controlled process of the digital control system is described by: $G(z) = \frac{0.0004 z^{-1}(1+2.78 z^{-1})(1+0.2 z^{-1})}{(1-z^{-1})(1-0.286 z^{-1})}$. The problem is to be design a digital controller which will produce an output response with zero steady state error and minimum settling time is response to a unit ramp input.	10 marks
Q4	A discrete-time unity feedback control system has an open-loop pulse transfer function $G(z) = \frac{0.008 z + 0.008}{(z-1)(z-0.9)}$. Design a compensator $D(z)$ such that sampling time ($T=0.2$ sec.), the frequency of oscillation ($\omega_n=10$ rad/s), and ($\zeta=0.4$).	10 marks
Q5	A discrete-time unity feedback control system has a forward-path transfer function $G(s) = \frac{32}{(s+1)(5s+1)}$ with zero order hold. When sampling time ($T=0.63$ sec.), determine the open-loop pulse transfer function.	10 marks
Q6	Sketch the root locus plot for $GH(z) = \frac{0.5 K z (z+1)}{(z-1)(z-0.4)}$, then find the range of (K) for stability using Jury stability test.	10 marks

With Best Wishes

Q4\ We have(4x4) ,4 gray level sub image:-

12	10	15	9
7	9	13	8
9	14	14	6
10	12	5	2

a-Convert it to binary image ?

b-Use pixel replication method to double the size of sub image ?

c-Use averaging method to shrink the size of sub image ?

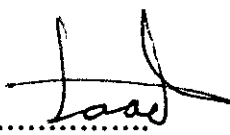
d-Apply the (LPF , HPF , Enhance , Max , Min and Median filter (3x3)) ?

Q5-A\ Explain in brief the Histogram of digital image with gray level in range (0 to L-1) ?

B-Explain in brief the ideal LPF ?

C- What the image representation types ?

Good Luck

Head of Dep.:

Name: Dr.....Saad...A. Salman

Lecturer:.....

Name: Saad Q. Fleh

University of Diyala
College of Engineering
Dep. Of Computer & S/W Emg.
Final Exam/2nd Attempt



Class:4th stage
Subject: Image Processing
Year: 2012-2013
Time:3 hour

Note:-Answer Four Questions Only

15 degrees for each question

Q1- A\ Enhance the image with(3bit/pixel) with the following normal and desired histogram by using histogram specification?

<u>g.L value</u>	<u>No. of pixel for each g.L</u>	<u>No. of pixel in desired histogram</u>
0	25	10
1	10	12
2	13	15
3	20	25
4	10	40
5	12	0
6	7	0
7	5	0

B- Explain in brief (RLC) and what the difference between use this method on binary and gray level images ?

Q2-A\ What is the function of image fidelity criteria? Write all equations that use for objective fidelity ?

B- What are the two types of computer graphics ?

C-What is the function of spherical coordinate transform (SCT) with all equations ?

Q3-A\ Draw the block diagram for compression and decompression system modal and what the function of each stage?

B- What are the questions that can be answer by image analysis ?





Q1/ a / using shift register to convert the following serial data (001101) in parallel out draw the circuit and the data output if the output of the register begin with (110010)

Q1/b/ whats the output voltage for six stage ladder network using (4.5 v=1) and (ov=0) for

- a) 001101
- b) 000111
- c) 111000
- d) 000011

Q2/ design a synchronous counter which F.F triggered with positive edge that has the following sequence (2,6,8,5,11,14,7) using J-K FF

Q3/ answer only two

a/ draw and test the circuit of direct simultaneous method if (parallel A/D convertor if (VR = 10V)

b/ Draw the logic diagram of the product of sums expression *and Find the transition table*

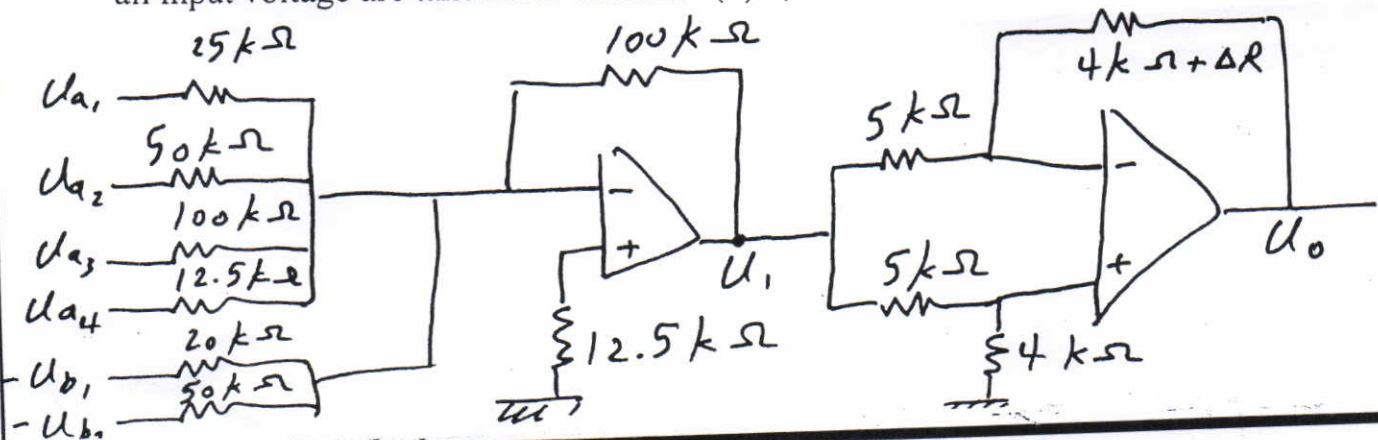
$$Y_2 = X_1 Y_2 + \bar{X}_1 \bar{X}_2$$

$$Y_1 = X_1 \bar{X}_2 + (\bar{X}_1 + X_2) Y_1$$

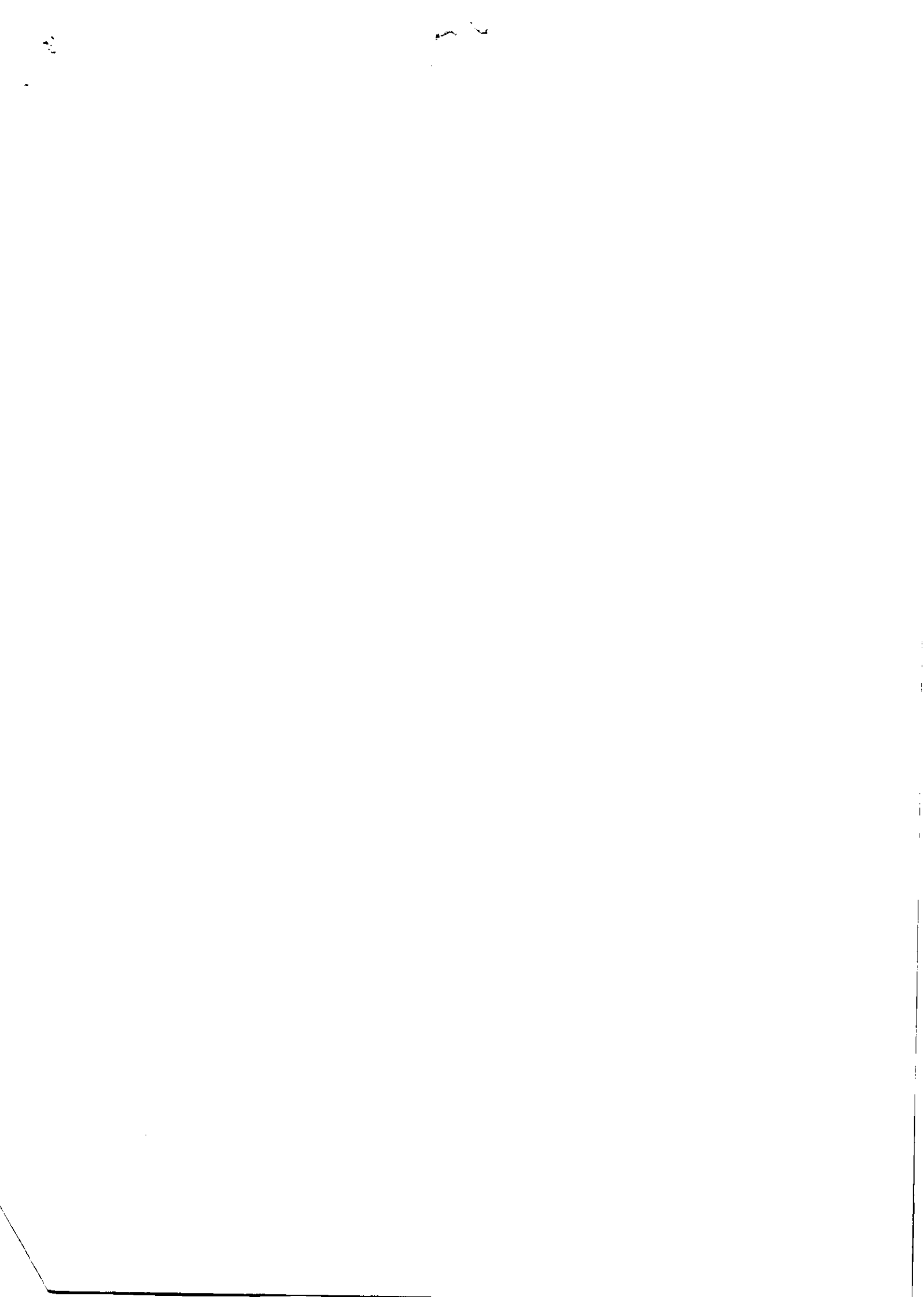
c/ Avoid a hazard in sequential circuit

$$Y = \bar{X}_1 \bar{X}_2 + X_2 \bar{Y} + X_1 Y$$

Q4/ figure shows an ideal operational amplifier determine the value of (ΔR) if the all input voltage are taken at a nominal (1) v, vo= 16 v



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OK

Note:- Answer All questions

Q1:// Answer the following, ((Choose Five Only)):

(15 marks).

- 1) What is the concept of server daemon?
- 2) What is the advantage of multiplexing?
- 3) List the criteria to choose the network environments?
- 4) Explain the concept of PAN_s?
- 5) What is the job of session layer?
- 6) Define the Telnet server.
- 7) Explain in detail the TLD?
- 8) Mentioned 3 applications that use UDP & 3 applications that use TCP.

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Q2:// Choose ((Three Only)):

(15 marks).

A:// Comparison between client/server & peer to peer networks.

B:// There are certain addresses that cannot be assigned to hosts for various reasons. There are also special addresses that can be assigned to hosts but with restrictions on how those hosts can interact within the network. Explain.

C:// What are the advantages & disadvantages of the static routing & dynamic routing.

D:// There are different types of ports number? List in detail.

Q3:// Suppose you are an administrator, you have network address 165.100.0.0, number of needed subnets 1000, and number of needed usable hosts 60.

Find the Following:

(12 marks).

1. Address class.
2. Default subnet mask.
3. Custom subnet mask.
4. Total number of subnets.
5. Total number of host addresses.
6. Number of usable addresses.
7. Number of bits borrowed.

Q4:// Which IPV4 addresses represent valid host addresses for a subnet?

(18 marks).

1. 172.16.192.80 /29
2. 172.16.192.115 /29
3. 172.16.192.174 /29
4. 192.168.223.129 /27
5. 192.168.223.95 /27
6. 192.168.223.224 /27

With My Best Wishes

مدرس المادة
Huda M. Al-Ansari

رئيس القسم





Note: - Answer all questions

etc

Q1:// Define ((Five Only)) of the following statements:

(15 marks)

1. Beowulf Clusters.
2. Mutual Exclusion.
3. Fault Tolerant.
4. Linux OS.
5. SCSI.
6. Privileged Mode.
7. Multimedia Data.
8. Cascading Termination.

Q2:// Answer the following: ((Choose Two Only)):

(12 marks)

- A. Illustrate the concept of Message Passing & the Shared Memory. Draw each of them.
- B. Classically, the binding of instructions & data to memory addresses can be done at any step along the way. List & Explain.
- C. To eliminate D.L_s using resource preemption, we preempt some resources from processes & give these resources to other processes until the D.L. cycle is broken. Discuss.

Q3:// Consider the following set of processes enter the system for execution with the information given below. Use RR CPU scheduling (T.S = 5).

(13 marks)

P	P ₀	P ₁	P ₂	P ₃	P ₄
A.T	6	0	8	3	4
B.T	16	7	5	25	9

Answer the following:

- 1) Draw the Gantt chart to show the termination of each process.
- 2) Calculate the average waiting time.

Q4:// A: // Consider a system in which memory consists of the following hole sizes in memory order 10k, 4k, 20k, 18k, 7k, 9k, 12k, & 15k. Which hole is taken for successive process request of 12k, 10, 9k, for the first fit strategy. Repeat question for the best fit strategy .

(10 marks)

B:// Consider the following segment table:

(10 marks)

Segment	Segment ₀	Segment ₁	Segment ₂	Segment ₃
Base	216	2300	90	1327
Length	600	14	100	580

What are the physical addresses for the following logical address?

- a. 0.430
- b. 1.20
- c. 3.600
- d. 2.90

With My Best Wishes

Attached Figures and Notes

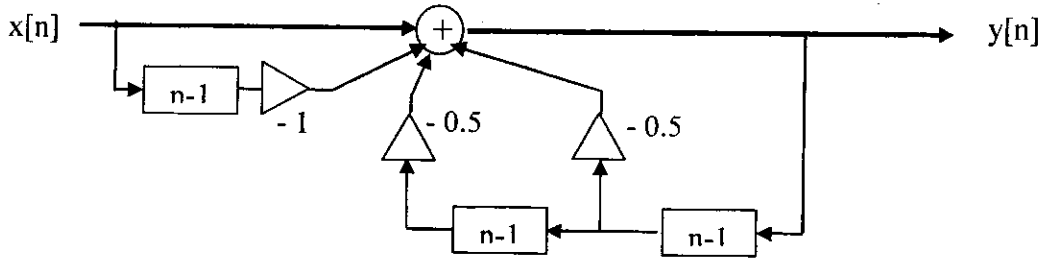


Figure (1)

University of Diyala
 College of Engineering
 Dep. Of (Computer +
 Communication) Engineering
 Final Exam/2nd Attempt



Class: (3rd +4th) stages
 Subject: DSP
 Year: 2011-2012
 Time: 3 hour
 Date: 12-9-2012

Note:-Answer All Questions

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Q1	Explain Five of the Following: (1) LTI Systems. (2) Lucy-Richardson Deconvolution. (3) Fourier Series. (4) Recursive Systems. (5) Butterworth Filter. (6) Advantages of FIR.	10 Marks
Q2	Using the graphical Solution, Find the Convolution between $x[n]$ and $h[n]$. Where: $x(n) = [1 \ 1 \ 1]$, $n = [0 \ 1 \ 2]$ and $h(n) = [3 \ 2 \ 1]$, $n = [0 \ 1 \ 2]$.	10 Marks
Q3	Sketch <u>Two</u> of the following Function. 1. $4u(t+3) - 2u(t-3) - u(-t+2)$. 2. $(\delta(t) + \delta(t-2)) \cdot e^{-0.5(t)}$ 3. $\int_{-\infty}^3 \delta(t-4) dt$	10 Marks
Q4	Find DFT for the following and show its Matrix Form. $x[n] = [1 \ 2 \ 3]$, $n = [0 \ 1 \ 2]$	10 Marks
Q5	A digital Processor is shown in Figure (1) . Find the z-transform of its output Signal and Check the stability of the Overall system.	10 Marks
Q6	Design a Chebyshev Filter with the following characteristics: 1- Acceptable Band Pass Ripple of 2 dB. 2- Cutoff Radian Frequency of 40 rad/sec. 3- Stop-Band Attenuation of 20 dB Beyond 52rad/sec	10 Marks

Good Luck

Head of Dep.:

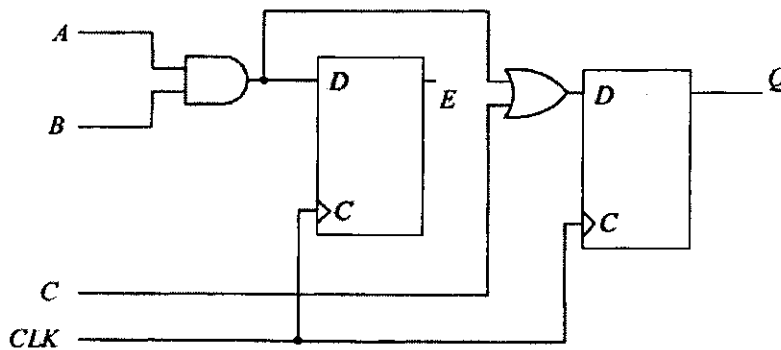
Lecturer:

Name: Dr. Saad A. Salman

Name MSc, Zeyad Assi Obaid

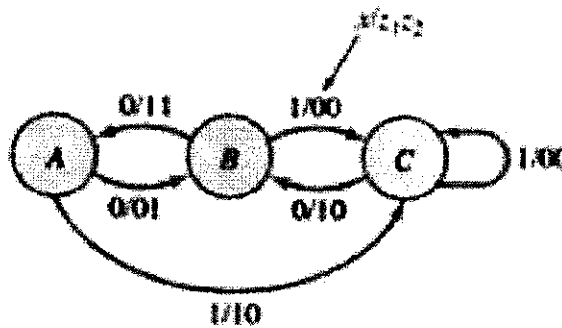
5 I) Show the main functions of *SPLDs* and *CPLDs*?

II) A sequential circuit with two *D* flip-flops, three inputs *A*, *B* and *C*, and two outputs *E* and *Q*, is specified by figure below, design it using first *GAL22V10* (show *OLMC* connection) and second *PAL16P8* and flip flops (show output logic connection)? (12 marks)



Q4/ Convert the state graph, it has two inputs (*X*) and two outputs (z_1z_2), shown in figure below to ASM chart, then realize it by using *PLA* and *D-Flip flop*?

(12 marks)



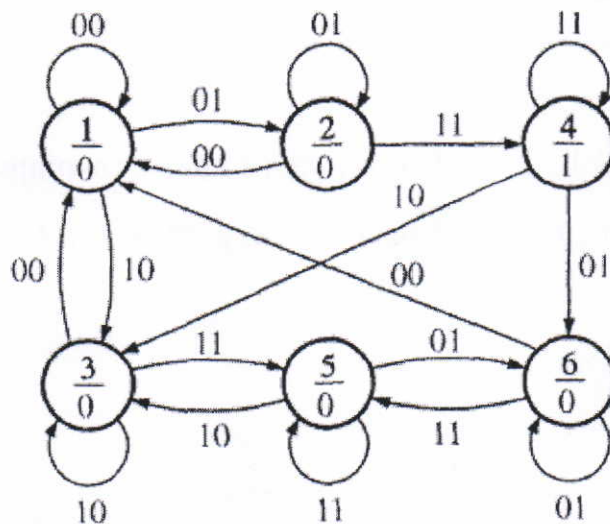
Q5/ Draw ASM chart for a clocked sequential network which investigates an input sequence *X* and which will produce an output of $Z = 1$ for ending of input sequence **010** and changed to **0** after two consecutive **1** or **100** in input sequence? (12 marks)



Note: answer all questions

Q₁ / A Mealy sequential network has two inputs and one output. If the total number of 1's received is ≥ 4 and at least 3 pairs of inputs have occurred, then the output should be 1 coincident with the last input pair in the sequence. Any way, if the total number of 0's received is ≥ 3 in two consecutive pairs of inputs have occurred, then the system should be reset the number of 1's that's counted and began new count. Derive a state graph and state table? (12 marks)

Q₂ / Design an asynchronous state machines whose state diagram is shown below. Locate all the essential hazard conditions and show how to eliminate them?



(12 marks)

Q₃ / answer A or B only:

A- I) Define **GAL**. Show the main different between **GAL** and other **PLDs**?

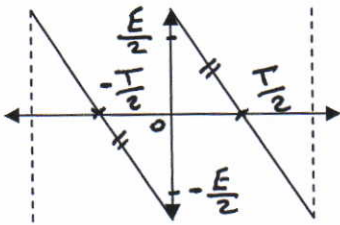
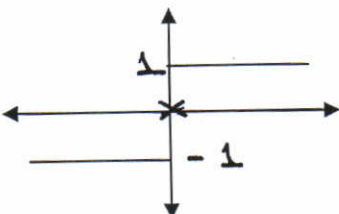
II) Implement the functions (F_1 and F_2) by using **PAL12P8** (show output logic connection)? $F_1 = \sum(0,1,4,11,14)$, $F_2 = \pi(1,3,4,6,9,12,14)$







Note:- Answer All Questions

Q1	Solve one of the following D. Eq.:- 1) $y' = (1 + y^2) e^x$ 2) $y''' + 5y'' + 9y' + 5y = 3 e^{2x}$	20%
Q2	Find Fourier series of:- 	20%
Q3	Find: 1) $\ell \int_0^t \sin t \, dt$ 2) $\ell \frac{\sin t}{t}$ 3) $\ell^{-1} \frac{3s-5}{4s^2-4s+37}$	20%
Q4	If $Z = f\left(\frac{y}{x}\right)$ then proof $X \frac{\partial Z}{\partial X} + Y \frac{\partial Z}{\partial Y} = 0$	20%
Q5	Find Fourier Transform of the figure:- 	20%

Good Luck

Head of Dep.:

Name: Saad A. Salman

Lecturer:

Name: Amaal Shaker



Note:- Answer all questions.

Q4: Draw a matrix to show what part of speech is each underlined word:

Virtually all businesses use computers and application programs such as power point , to complete effectively in today's global economy . As you become empowered in the use of technology you will significantly increase your potential for success in the workplace.

Q5: A-Match the definitions on the right with the words on the left.

- | | |
|----------------|--|
| 1. portable | A. going right into the middle of problem |
| 2. unicycle | B. someone who never has the correct facts |
| 3. intercede | C. very small |
| 4. misinformed | D. can be carried |
| 5. minuscule | E. a period of a thousand years |

B- Change the following words into verbs. (choose five only)

Application , strong , assistance , electricity , pure , maintenance

Q6: Change the following words into numerals : (choose Five only)

1. minus forty degrees centigrade.
2. seven times three is twenty – one.
3. Nought point eight six .
4. The fourth root of sixty .
5. thirty – five percent .
6. divide one hundred by two.

With Best Wishes

A handwritten signature in black ink, appearing to read 'Saad'.

Head of Dept
Dr. Saad A. Salman

A handwritten signature in black ink, appearing to read 'Areej'.

Lecturer
Areej S. Dawood



Note:- Answer all questions.

Q1: Your name is Adil Ahmad , compose a message about yourself and send it to techenglish@yahoo.com , your message should include the following:

1. Date of birth.
2. Date of graduation from secondary school.
3. Department , College and University.
4. Your opinion about the field of study.
5. The topics you studied during the first academic year.

Q2: Correct the form of the words in parentheses: (choose Five only)

1. The student (format) the disk yet .
2. Saving a file transfers (their) contents from the computer's memory to a disk for you to retrieve later.
3. The primary advantage of the internet is that information (be) usually very current.
4. Practice (use) the mouse until you become comfortable with it.
5. The students would develop the computer skills , if they (do) all their schoolwork on computer .
6. A computer performs much (many) operations than a transformer .

Q3: Do as required : (choose Five only)

1. A silicon chip is used in a computer . (change into plural)
2. You should have extra computer disks. (insert: in your lab, always)
3. Networks of computers have made human communications improve well. (change into passive voice)
4. His program has been completed by a program made for a computer. (noun acting as adj.)
5. A pocket calculator , a computer , not large .(use : as ... as)
6. The accuracy with ----- a computer operates is surprising . (complete with a relative pronoun)

A handwritten signature in black ink, appearing to read 'Saad'.

Head of Dept
Dr. Saad A. Salman

Lecturer
Areej S. Dawood





Note:- Answer all questions

Q1 / (Answer three only):

- A- find the binary equivalent of $(0.125)_{10}$?
- B- find the octal equivalent of $(95.265)_{10}$?
- C- find the octal equivalent of $(2F.C4)_{16}$ and the hex equivalent of $(762.013)_8$?
- D- find the binary equivalent of $(1E0.2A)_{16}$?

Q2/

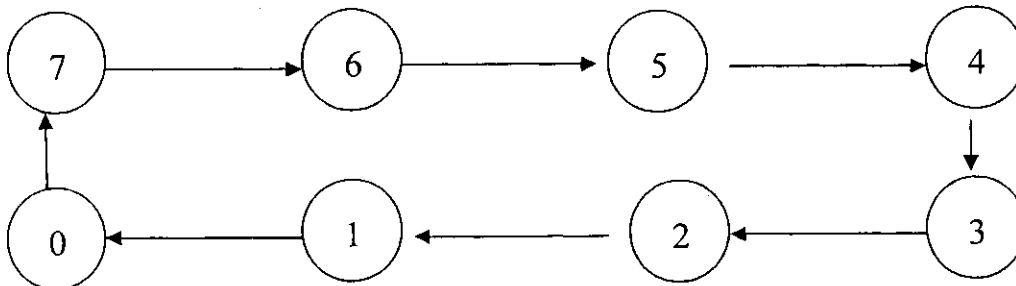
- A- Find the Gray code equivalent of $(1010101)_2$ and the binary equivalent of Gray code number (101110) and draw both circuits by using X-OR only?
- B- Design BCD to Decimal decoder?
- C- design an even parity checker circuit for three bit?

Q3/

- A- design circuit that multiple two variable number each one have two bit?
- B- Implement a full subtractor combinational circuit using a 3-to-8 decoder and external NOR gates..
- C- Design Full Adder circuit by using (8-1) multiplexer, (4-1) multiplexer and (2-1) multiplexer?
- D- By using Half Adder design $y = \overline{(\bar{x} + \bar{y})} \oplus z$?

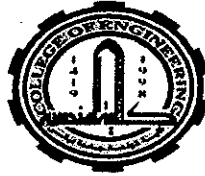
Q4\

- A-design 4- bit an a synchronous binary down counter and draw timing diagram?
- B-design a synchronous down counter for the following state diagram using RS- flip- flop?



GOOD LUCK





Final Exam in Artificial Intelligence- 2012/ Second attempt

Q1\ A) Complete the following . (6M)

1. _____ contains the information that the system has gained about the problem thus far.
2. The main disadvantages of production rules _____ and _____.
3. In search the _____ describe the set of possible actions.
4. _____ is a search algorithm which explores a graph by expanding the most promising node chosen according to a specified rule.
5. _____ is a structured representation describing a stereotyped sequence of event in a particular context

B) List and explain Knowledge Representation Schemes ? (4M)

Q2\ Marcus was a man. Marcus was a Pompeian. All Pompeian were Romans. Ceasar was a ruler. All Romans were either loyal to Ceasar or hated him. Everyone is loyal to someone. Men only try to assassinate rulers that are not loyal to. Marcus tried to assassinated Ceasar.
Use resolution to prove the query " Was Marcus hating Ceasar?"

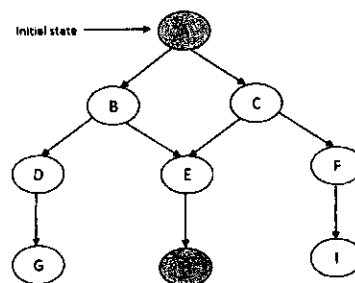
(10M)

Q3\ A) Represent the following using semantic network. (5M)

Tom is a cat. Tom caught a bird. Tom is owned by John. Tom is ginger in color. Cats like cream. The cat sat on the mat. A cat is a mammal. A bird is an animal. All mammals are animals. Mammals have fur.

B) There are several application areas in Natural language processing. List them with definitions. (5M)

Q4\ Compare between Breadth first search and Depth first. Then By using Breadth first search and Depth first search find the path from the start state to the goal state H.



(10M)

Q5\ What is Resolution? Then reduce the following expression to clause form. (10M)

$$(\forall X)([a(X) \wedge b(X)] \rightarrow [c(X, I) \wedge (\exists Y)(\exists Z)[c(Y, Z) \rightarrow d(X, Y)])] \vee (\forall X)(e(X))$$

<p>Q4</p>	<p>Choose A or B: A/Compare among switching mechanism techniques and show the advantages and disadvantages for each method? B/Define directory based protocols and explain its types by details?</p>	<p>12 marks</p>
<p>Q5</p>	<p>A/Draw a diagram showing the structure of a five-dimensional hypercube network? B/A pipeline has the following propagation times: 40 ns for the operands to be read from memory into registers R1 and R2, 45 ns for the signal to propagate through the multiplier, 5 ns for the transfer into R3, and 15ns to add the two numbers into R5 . a. What is the minimum clock cycle time that can be used ? b. A non pipeline system can perform the same operation by removing R3 and R4. How long will it take to multiply and add the operands without using the pipeline ? c. Calculate the speedup of the pipeline for 10 tasks? d. What is the maximum speed up that can be achieved?</p>	<p>15 marks</p>

Good Luck



Head of Dep.: Dr. Saad A. Salman

Lecturer: M.Sc. Baaida Q. Fleeh

University of Diyala
 College of Engineering
 Dep. of Computer & Software Eng.
 Final Exam. / 2nd Attempt



Class: 4th stage
 Subject: Parallel Processing
 Year: 2011-2012
 Time: 3 hour
 Date: 13 - 9 - 2012

Note:-Answer Five Questions Only

6/C

Q1	<p>Represent the following by using MPI functions with its parameters:</p> <p>(1) A function used to create Cartesian structures of arbitrary dimension.</p> <p>(2) A function used to send messages in MPI.</p> <p>(3) A function broadcasts a message from the root task to all tasks of the communicator's group.</p> <p>(4) A function partitions the group into disjoint subgroups.</p> <p>(5) A function creates a new communicator to which a graph topology information is attached.</p>	15 marks
Q2	<p>A memory of 64k words, Assign addresses into an interleaving memory with 16 modules? How many addresses will be in each module after assigning process? Draw the block diagram of modules by using a decoder with an appropriate size?</p>	10 marks
Q3	<p>Consider the four instructions in the following program. Suppose that the first instruction starts from step 1 in the pipeline that uses the following four-segment pipeline : (1) FI: Fetch instruction from memory. (2) DO: Decode instruction and fetch source operand. (3) EX: Perform the operation specified by the instruction. (4) W: Store the result (write). Specify what operations are performed in the four segments during step 5 and step 6, and draw space time diagram assuming:</p> <p>(a) The pipeline system uses <i>hardware interlock technique</i> to handle data hazards (data dependency).</p> <p>(b) The pipeline system uses <i>the operand forwarding technique</i> to handle data hazards.</p> <p>LOAD R1 ← M[312] ADD R2 ← R2 + M[313] INCR3 ← R4 + 1 STORE M[314] ← R3</p>	8 marks