

FACULTY OF COMPUTING

SECL 1013

DISCREET STRUCTURE

ASSIGNMENT 1 - CHAPTER 1

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	Assignment 1						
-	in) CXB						
ľ	1 0) U= 150 , F= 25 only , I= 30 only , T= 20 only						
(P)	= £(3,3), (3,3), (3,1), (6,3), (6,3), (6,3), (4,3)						
	FOIOTES						
	1) = (p/q~IV(p/q) - 10 (c						
	25 (15) 30 " Slast dual						
	5/						
101	(20) 5						
•							
	20						
	TO THE PROPERTY OF THE PROPERT						
	TO FIRST STATES						
	T T T T T T T T						
	ii) (FUIUT) = 150-[25+15+5+20+20+5+30]						
	= 30						
	iii) = 15+20+5 WAL MAS MAS DIES!						
	- 40						
	$q \sim = (p \wedge q \sim) \vee (p \vee q) \sim$						
7	iv) = 30+5+20						
	= ((p / 2) V (p / 2) De Morge = 1 de						
	wol studister (AVAN) 100 =						
	b) A= {3,5,7,9} ,B= {3,5,7} ,C= {3,6,9}						
	= op Identity law						
	i) IAI = 4, IBI = 3, ICI = 3						
	(bV1) = d(10						
	(i) $IP(A)I = 2^{4}-I$						
	=15 (7/1) (- 9~ (1)						
	P(A): { {}, {3}, {5}, {7}, {4}, {3,5}, {3,7}, {3,4}, {5,7}						
	· {5,9}, {7,9}, {3,5,1}, {3,5,9}, {5,7,9}}						

	$= \{3,6,9\} \times \{3,5,7\}$ $= \{(3,3),(3,5),(3,7),(6,3),(6,5),(6,1),(9,3),(9,5),(9,7)\}$							
	= {(3,3), (3,5), (3,1), (6,5), (6,5), (6,1), (4,3), (4,5), (4,1)							
	a) ~ (pvq) v (~p ~ q) = ~ p							
2)								
	Truth table:			02 30	OR I TO TELL TO THE TELL TO THE TELL TO THE TELL TO THE TELL THE T			
	ρ	9	νρ	~рла	Pva	~(pvq)	~(pvq)v(~pnq)	
				ZC 7				
	T	T	F	F		F	F -	
	T	F	F	F	<u> </u>	F	F	
	F	T	T.		1 T 021) 7 (ii	
	F	CF8T	2462	+ OCFGTEN	150-1254	- (11017)		
	logic property law 2+02+21 = (iii							
	○ + =							
	w (p Va)	V (~p19) =				
							- (vi	
	= (np129) V (np19) De Morgon's law							
	= up 1 (~q vq) Distribute law							
	= ~p. M. Duc III fr. T. anno Tier Paris 3 = A (d							
	= up : Identity law 8=131 8=181 H=1A1 (i							
	1.		764		161=5	62101	-H = 181 (1	
	b) i) p->(r/q) ii) ~ (q, vr) ->~p 1-+2=1(A)91							
	ii) ~ (q vr) ->~p 1-10=1(A)91 (III) ~ p -> ~ (q vr) 31=							
(= 1								
5, Z	(Ep.7.27, (P.3.87, (1.8.87, 19.3), (5.7.93)							
	460	11,19		1 1 7 7 1 1 1	1 1 1 1 1 1 1	114742		

	5
	c) [\day (2 + 22 - 3, =0)
	3
8	1 - (1x2 + 2x - 3 = 0) AN D STOPPIN + STOPPIN TO STOPPIN
	2 + 2n -3 # 0 2 1 No 10 10 10 10 10 10 10 10 10 10 10 10 10
	(2-1)(2+3) \$0
	0=2k+1 / 1+ x2=0
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
2	= 4K2+4K+1-86
) ,	32(22+2x-3 +0) + (d-12+2) =
750	
	The statement is TRUE when all integers
	except n=-3 and n=1
	۵) ز)
	R(n) " Student n can speak Russian
	c(n): Student no know that
70. 8	That was borse sid!
	i) $\exists x (R(x) \land \neg c(x))$
	The assymption is FALSE
7	ii) \\ \(\(\(\(\(\(\(\(\(\(\(\) \\) \) \) \\ \\ \\ \\ \\ \\ \\ \\ \
	most be even.
	iii) ~ \x (R(x) V c(x))
	=2 (-R(2) 1 -C(2)) ~ (PV4)
	11. HI = 11. DI = 2 10 = 3
	The second secon

Case 1 $\sim q = q$ is odd $\sim r = b$ is odd $\sim p = a^2 - 3b$ is odd $a^2 - 3b = (2k+1)^2 - 3(2k+1)$ (1+3a) = 4a. $= 4k^2 - 2k - 2$ 1+32 1+32 1+32 $= 2k + 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2$ 1+32 $= 2k + 2k - 2k - 2k - 2k - 2k - 2k - 2k -$	3)	indirect prove
Case 1 $\sim q = q$ is odd $\sim r = b$ is odd $\sim p = a^2 - 3b$ is odd $q^2 - 3b = (2k+1)^2 - 3(2k+1)$ $= 4k^2 + 4k+1 - 6k + 3$ $= 4k^2 - 2k - 2$ $= 2(2k^2 - k - 1)$ $= 2m$ $= 3m$		a=2k, $b=2k+1$
$ \begin{array}{c} \sim q = q \text{ is odd} \\ \sim r = b \text{ is odd} \\ \sim p = a^2 - 3b \text{ is odd} \\ q^2 - 3b = (2k+1)^2 - 3(2k+1) \\ = 4k^2 + 4k+1 - 6k+3 + 4k+4 + 4k+1 \\ = 4k^2 - 2k-2 + 4k+1 + 4k+1 \\ = 2(2k^2 - k-1) + (3k+1) + 4k+1 + 4k+1 \\ = 2m $	C	
$ \begin{array}{l} \sim r = b \text{ is odd} \\ \sim p = a^2 - 3b \text{ is odd} \\ \\ a^2 - 3b = (2k+1)^2 - 3(2k+1) & (1+1) + 4 \\ \\ = 4k^2 + 4k+1 - 6k+3 & (4+1) + 4 \\ \\ = 4k^2 - 2k-2 & (4+1) + (4+1) + 4 \\ \\ = 2m & \text{number times with } 1 + 2m & \text{give give give even number} \\ \\ \qquad $		보다 하나 사람들이 되었다. 그는 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은
$a^{2}-3b = (2k+1)^{2}-3(2k+1)$ $= 4k^{2}+4k+1-6k+3$ $= 4k^{2}-2k-2$ $= 2(2k^{2}-k-1)$ $= \frac{2m}{any}$ number times with 12m give $= \frac{2m}{any}$ even number $= 2m$		
$a^{2}-3b = (2k+1)^{2}-3(2k+1)$ $= 4k^{2}+4k+1-6k+3$ $= 4k^{2}-2k-2$ $= 2(2k^{2}-k-1)$ $= \frac{2m}{any}$ number times with 12 migive $= \frac{2m}{any}$ even number $= 2$		
$= 4k^{2} + 4k + 1 - 6k + 3 + 4k + 4$ $= 4k^{2} - 2k - 2$ $= 2(2k^{2} - k - 1)$ $= 2my$ $= 2m$		
$= 4k^{2} - 2k - 2$ $= 2(2k^{2} - k - 1)$ $= 2m$ $= any number times with 1.2 migive$ $give even number block 1.1.2 $		
$= 2(2k^{2}-k-1)$ $= 2m$ $= 2$		
give even number block the service of the service		$= 2(2k^2-k-1)$ $+(3k^2+3k^2)$
give even number block the service of the service		= 2m = any number times with 12m give
The is false Case 2 total and the property of the property o		air exec number the El Hi
The ise false Case 2 total and the control of the case 2 total and the case 4 total and		J. W. C.
The ise false Case 2 total and the control of the case 2 total and the case 4 total and		va. Vor -> ~p
Case 2 total and that asking at the odd		
	C	so the is proven that the state of
$ \gamma = a \text{ is even} $ $ \gamma = b \text{ is odd} $ $ \gamma = a^2 - 3b \text{ is odd} $ $ a^2 - 3b = (2k)^2 - 3(2k+1) $ $ = 4k^2 - 6k - 3 $ $ = 2(2k^2 - 3k) - 3 $ $ = 2m - 3 $ $ = it \text{ is odd} $ $ q v v r - \gamma v p $		
$a^{2}-3b = (2k)^{2}-3(2k+1)$ $= 4k^{2}-6k-3$ $= 2(2k^{2}-3k)-3$ $= 2m-3$ $= it is odd$ $q \vee v = 0$	J	1
$= \frac{4k^2 - 6k - 3}{2(2k^2 - 3k) - 3}$ $= \frac{2m - 3}{2i + is odd}$ $= \frac{3k^2 - 6k - 3}{3k}$, - 2 13 1
$= \frac{4k^2 - 6k - 3}{2(2k^2 - 3k) - 3}$ $= \frac{2m - 3}{2i + is odd}$ $= \frac{3k^2 - 6k - 3}{3k}$	-	$a^2 - 3b = (2k)^2 - 3(2k+1)$
$= 2(2k^{2}-3k)-3$ $= 2m-3$ $= it is odd$ $q v v r \rightarrow p$		
= 2m-3 =it is odd q v nr -> np		
q v nr -> np		
qvnr -> np		
7, 19 1/00		
		7, 5

