Question 1

a. pigeons - stydents

pigeonholes - scores on scale from 0 to 100 points.

let set x is the scores on scale from 0 to 100 points,

X = {x eN | 0 \le x \le 100} while N is natural numbers.

1x1 = 101

6

Number of Stydents in a class to guarantee that at least two students received the same score.

1x1 + 1 = 101 + 1

= 102 students

pigeons - students

pigeonholes - grade

let set x be the grade for Discrete Structure class.

X = { A, B, C, D, F }

1×1 = 5

Minimum number of students required in Discrete structure class so that at least 6 students received the same grade, N:

[n]-				
$\left\lceil \frac{n}{m} \right\rceil = k$	m(k-1) < m = n	N = 25 +1		
	<b>W</b>	= 26 stydents		
$\left[\frac{N}{\epsilon}\right] = 6$	5 (6-1) LN			
5	5(5) LN			
	N 7 15			

STANDARD

## Question 2

- a) P(B1) = 0.70
- b) p(B2) = 0.30
- c) p(w161) = 0.20
- d) p(BINW) = P(BI) × P(W|BI) = 0.70 x 0.20 = 0.14
- e) P(B2 nw) = p(B2) x P(W|B2) = 0.30 x 0.40 = 0.12
- f) P(W) = P(BI NW) + P(BI NW) = 0.14 + 0.12 = 0.26

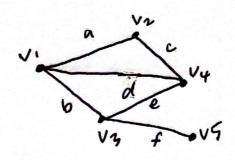
g) 
$$P(B|IW) = \frac{P(B|AW)}{P(W|B|)P(B|) + P(W|B|2)P(B|2)}$$
  
=  $\frac{0.14}{0.20(0.70) + 0.40(0.30)}$   
= 0.5385

	No:
	Question 3
	a. Vertices - Vertices is plyral for vertex. Vertex represents a point
	in the graph.
	b Edges - Edges is the connection between vertices in the graph. An edge
and private to standard and private and the standard and	can connects two vertices or to itself.
	c. Adjacent vertices - For edge that connect two vertices, these vertices
<b>(</b>	are called adjacent. For loop, edge that start
	and end in the same vertex, is called adjacent
	to Itself:
	d. Incident edge - when a vertex have multiple edges, these edges are
	called incident edges.
	e. Isolated vertex - Vertex that does not have any edges. This vertex is
	not connected to itself or another vertices.
•	f. Loop - Loop is a vertex that is connected to itself.
	g. Parallel edges - multiple edges that Connect the same pair of vertices
	The state of the s

No:	Date:
Graph:	
	The state of the s
Vy ez Vy	majores special and the second
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le, le,	A STATE OF
15° VI	
VI	H. Marsall - Martin Twingth
and the Arman and the Landson	And the last of th
xample:	River Description
the state of the s	Ve }
1. Vertices, V = { V, , V2 , V3 , V4 ,	7.1
2. Edges , E = {e1, e2, e3, e4 }	ASTOR & PORT & PORT ARCHITECT
	make no health
3 43	Vz and Vz are adjacent
V2 are adjacent to itself	us and Vy are adjacent
Conservation of the Head of the State of the	
4. For vertex 3, incident edges	
Thor vertex 9, thought cages	
10.11.11 1.41.60.130 11.	
5. Vi is the isolated vertex	
T. I. S. C. S. B. B. B. J. F. B. B. S. C. S. S.	Andre miller in the Committee
1 II is loop	
6. V2 is loop	the state of the second of the second of the second
6. V2 15 100P	
7. ez and ey are parallel edges	

# Question 4.

a: {v1, v29
b={v1,v33
c = {v2, v43
d = {v1, v43
e={v3,v43
f={v3, v53



vertex	VI	V2	13	14	1 15
Degree	3	2	3	3	1

#### Question 5

### i. Incidence matrix

	9	Ь	С	q	e	· f	9	h	i	k	
	1	2	1	1	0	0	0	O	0	0]	
2	0	0	0	0	1	0	0	0	0	0	
3	١	0	1	0	0	- 1	1	1	0	0	
4	0	0	0	_ 1	1	1	0	0	1	0	
5	0	0	0	0	0	0	1	1	0	1	
6	_ 0	0	0	0	0	0	0	0	1	1	

## ii. Adjacency matrix

	1_	2	3_	4	5	6	The second secon
1	1	0	2	1	0	0	The second secon
2	0	0	0	1	0	0	
3	2	0	0	1	1	1	
4	١	ı	1	0	0		and the second section of the section of the second section of the sect
5	0	0	1	0	0	-	
6	_ 0	0	1	1	1		
					-	<u> </u>	

6.		Graph Y Graph Z
	Number of vertices	
	Number of edges	9 9
		d(A)=2 $d(1)=3$
	vertex	d(B)=4 d(2)=2
		d(c)=3 d(3)=4
		d(D)=4 d(4)=3
		d(E)=2 d(5)=4
		d(f)=3 d(6)=2
	Number of loops	0
	Number of	
	parallel edges	
	Graph type	Connected Connected
	Pairs of	Connected Connected  A B 6 5
	connected vartices	
		E C 2
		0 3
		Francisco
		(recording to the said
	Conclusion	Graph Y and Z are isomorphic.
	Adjacency	ABCDEF 654321
	matrix	A 0 1 0 1 0 0 6 0 1 0 1 0 0
	()	B 1 0 0 1 1 1 5 1 0 0 1 1 1
	1	Ay = C 0 0 0 1 1 1   Az = 4 0 0 0 1 1 1
		D   1   1 0 0   3   1   1 0 0
	Ĺ	E 0 1 1 0 0 0 2 0 1 1 0 0 0
		F 0 1 1 1 0 0 - 1 0 1 1 1 0 0

٦.	P es 1t
	ley
	e, e, e,
	9 03
	q r
	y— e2
<b>`</b> )	(p, es t)
	(p,e1,q,e2,r,e7,t)
	(p, e1, q, e6 s, e4, t)
	(p,e1,q,ex,r,e3,s,e4,t)
	(p.e., q. e6, s. e3, r. e7, t)
` <u>``</u> )	(p, es, t)
	(p,e,q,ex,r,e1,t)
	(p,e, q, e6, s, ext)
	(p, e1, q, e2, r, e3, s, e4, t)
	(p,e1,q,e6,5,e3,r,e7,t)
	(p, e5, t, ex, s, e6, q, e2, r, e7, t)
	(p, e5, t, e4, s, e3, r, e7, t)
	(p, es, t, e7, r, e3, s, e4, t)
	(p,es,t,ez,q,e6,s,e4,t)
	The state of the s
<u>;;;)</u>	Shortest path from vertex p to vertex t = (p, es,t)
I = I	Longest path from vertex p to vertex t = (p, e1, q, e2, r, e3, 5, et, t) or
<i>†</i>	(p,e,q,e6,5,e3,r,e7,t)
14)	Shortest trail from ventex p to vertex t = (p, es, t)
	Longest trail from vertex p to vertex t = (p,es, t,e4, s,e6, q,e2, r,e7,t) or
	(p,es,t,e7,r,e2,q,e6,s,e4,t)