Graph Theory Assignment #03 Date:

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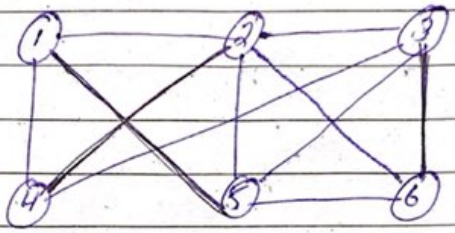
20K-0477

Question # 01 :

let $n=3$

$\delta(n) = \delta(3) = 6$.



all degrees greater than equals to n.

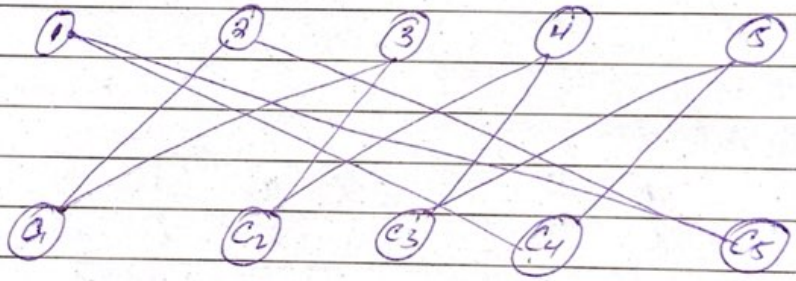
Perfect Matching :

$(1,5)$, $(2,4)$, $(3,6)$.

Hence proved.

Question # 02 :

(a)



(b)

2

(c)

2

(d)

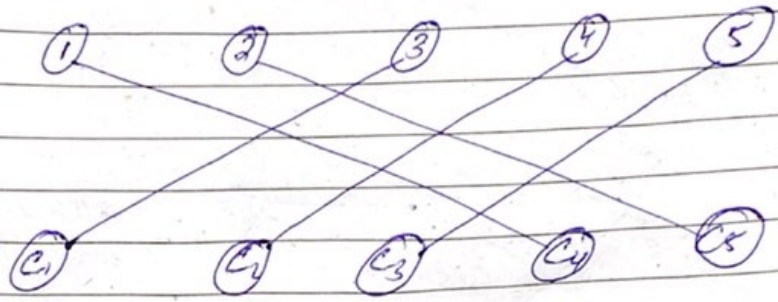
Yes

Date:

(e)

Yes.

(f)



Question # 03

(a)

No

(b)

5

Question # 04

MEN PROPOSING:

① =>

v	a	x
w	c	x
x	c	?
y	c	x
z	d	?

② =>

v	b	x
w	b	?
x	e	?
y	d	?
z	d	x

Sandal

Date:

(3) ⇒

u	a	?
v	c	✓
w	b	?
x	e	x
y	d	?
z	e	?

(4) ⇒

u	a	x
v	c	✓
w	b	?
x	a	?
y	d	?
z	e	?

(5) ⇒

u	b	x
v	c	✓
w	b	?
x	a	?
y	d	?
z	e	?

(6) ⇒

u	d	?
v	e	✓
w	b	?
x	e	?
y	d	?
z	e	?

(7) ⇒

u	a	x
v	c	✓
w	b	?
x	a	?
y	d	?
z	e	?

(8) ⇒

u	f	✓
v	a	✓
w	b	✓
x	a	✓
y	d	✓
z	e	✓

Result :

u → f
v → c
w → b
x → a
y → d
z → e

Pg No

Sandal

Date:

WOMEN PROPOSING:

① a z ?
b y ?
a v ?
d w ?
e u ✗
f u ?

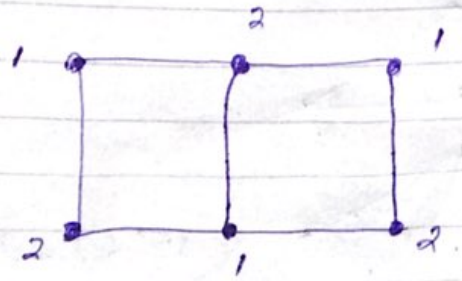
② a z ?
b y ?
a v ?
d w ?
e v ✗
f u ?

③ a z ✓
b y ✓
e v ✓
d w ✓
e x ✓
f u ✓

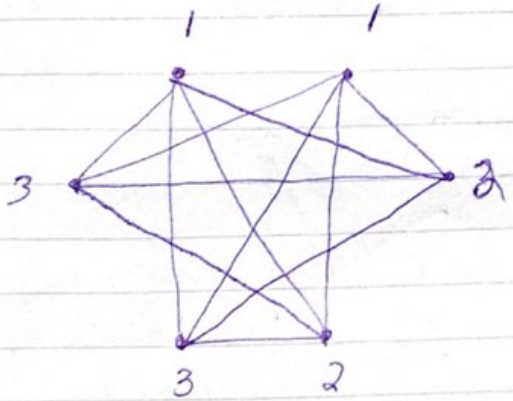
Result:

a → z
b → y
c → v
d → w
e → x
f → u

Question # 05



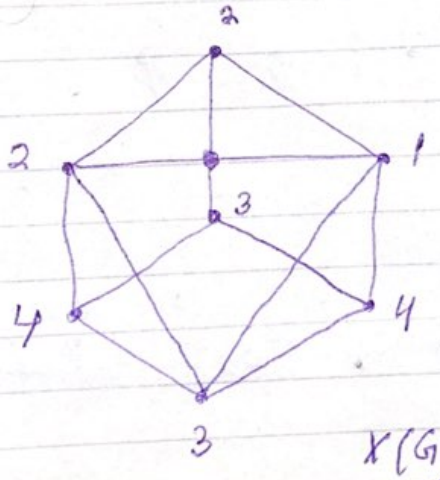
Chromatic Number : 2.
Equitable coloring : → 1



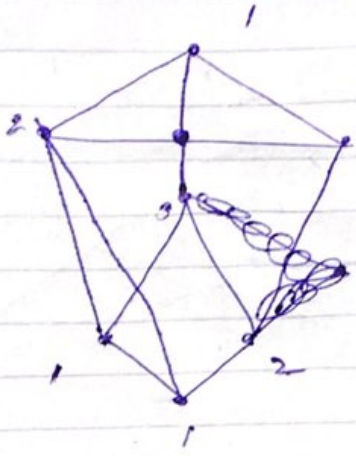
Chromatic Number : 3
Equitable coloring : → 1

Question #6 :

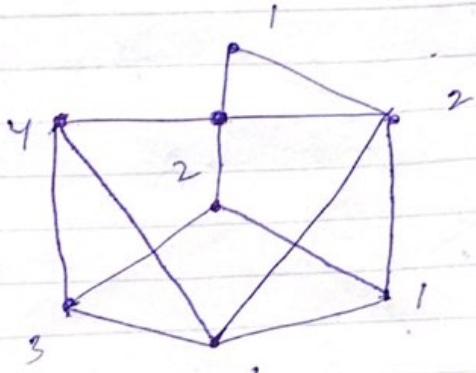
(i)



$\chi(G) = 4$



$\chi(G) = 3$

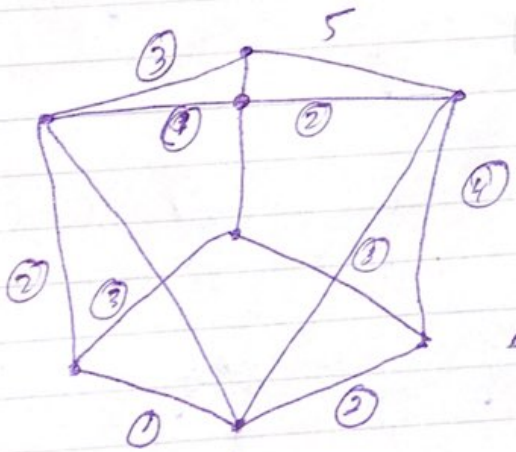


$\chi(G) = 4$

$\chi(G-e) = \chi(G) - 1$
Not proved for all edges

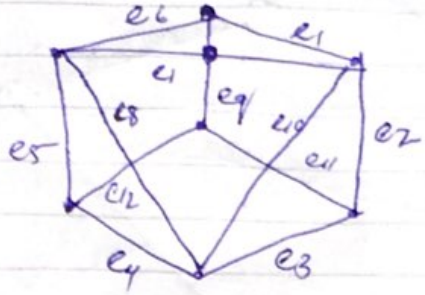
(iii.)

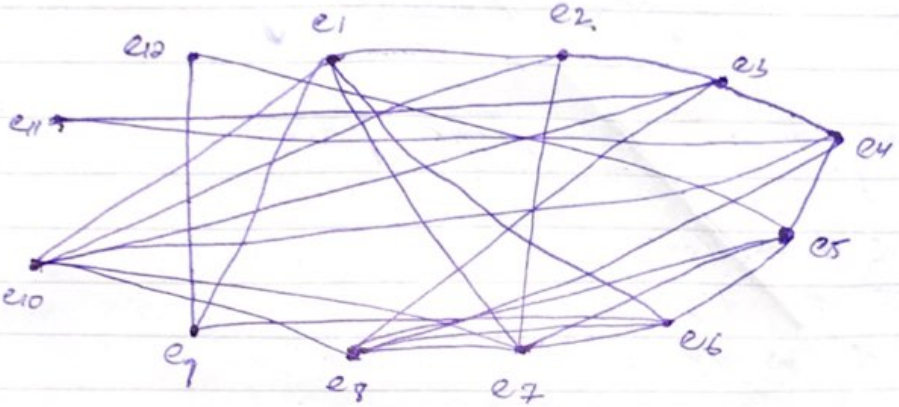
Question



$\chi'(G) = 5$
$\Delta(G) = 4$
$\Delta G \leq \chi'(G) \leq \Delta(G) + 1$
$4 \leq 5 \leq 4 + 1$
Proved.

(iv)





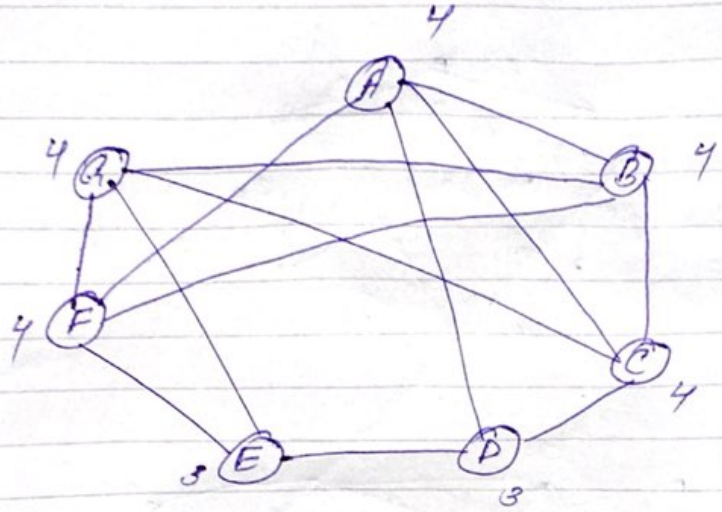
(v)

$\chi(G) = \chi'(G)$

$5 = 5$

Verified.

Question # 07

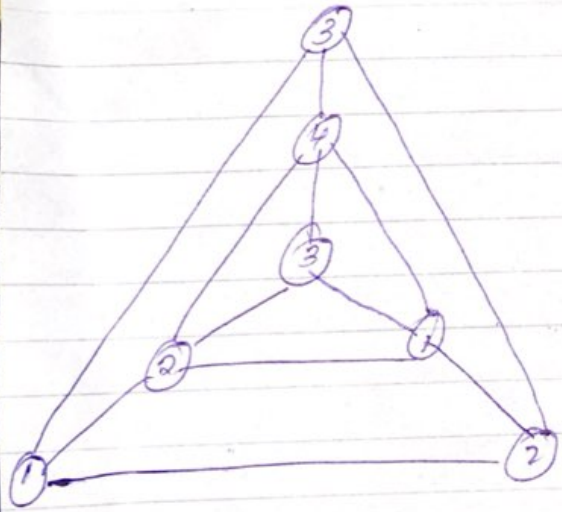


Taking A has higher degree node.

ABC ⇒ K_3
ABF ⇒ K_3
ADC ⇒ K_3

Question # 08;

(a)



(b)