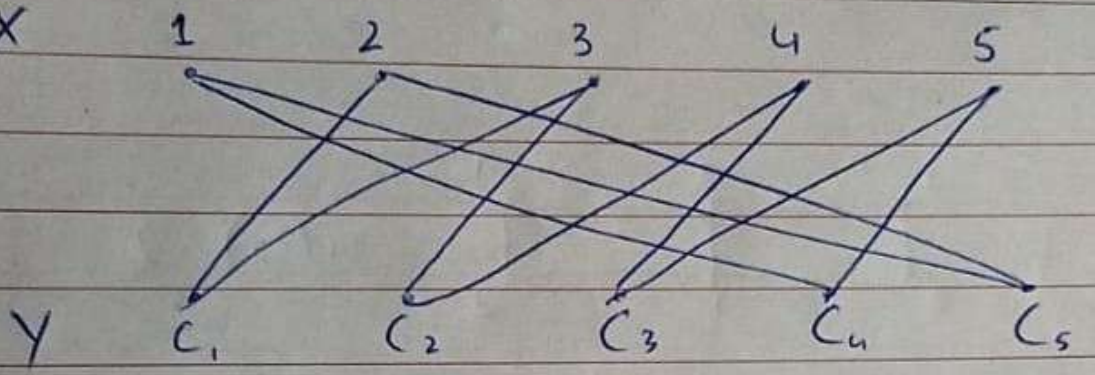
Q1.

G will have hamiltonian cycle. Taking every 2nd edge of this cycle results in perfect matching.

Q2.

a)



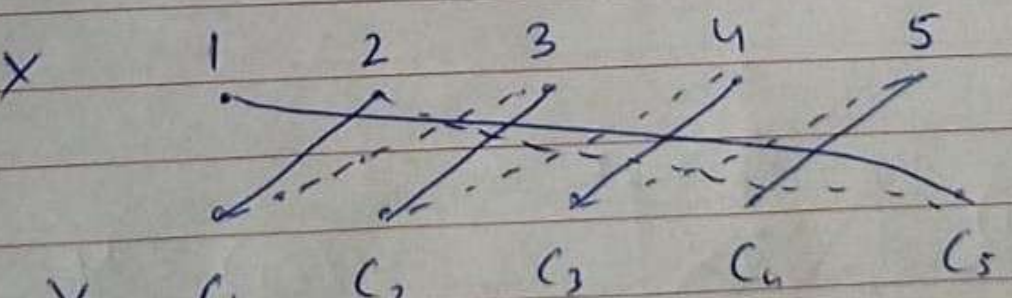

b) 2

c) 2

d) yes

e) yes

f)




Q3

a) No

b) 5

Question no. 4

Interpolation

① w a ?
v a x
w c x
x c ?
y c x
z d ?

② w a ?
v b x
w b ?
x c ?
y d ?
z d x

③ w a ?
v c v
w b ?
x c x
y d ?
z e ?

④ w a x
v c v
w b ?
x a ?
y d ?
z e ?

⑤ w b x
v c v
w b ?
x a ?
y d ?
z e ?

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

1) u c x
v c ✓
w b ?
x a ?
y d ?
z c ?

u → f
v → c
w → b
x → a
y → d
z → e

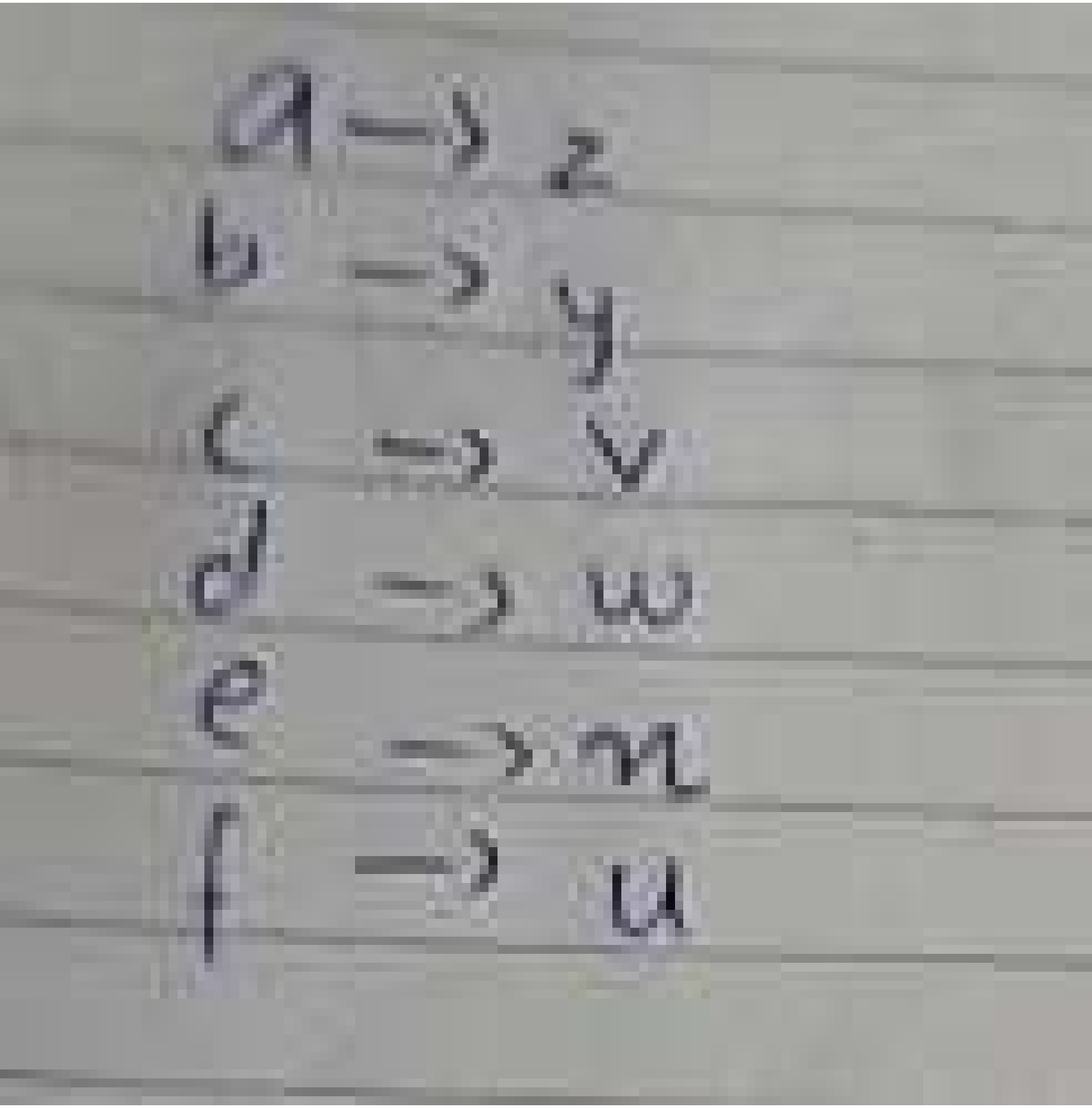
⑧ u f ✓
v c ✓
w b ✓
x a ✓
y d ✓
z e ✓

Woman popping.

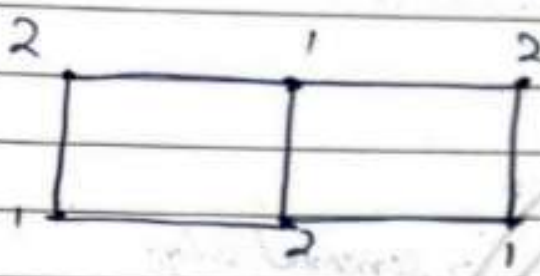
a z ?
b y ?
c v ?
d w ?
e u x
f u ?

② a z ?
b y ?
c v ?
d w ?
e v x
f u

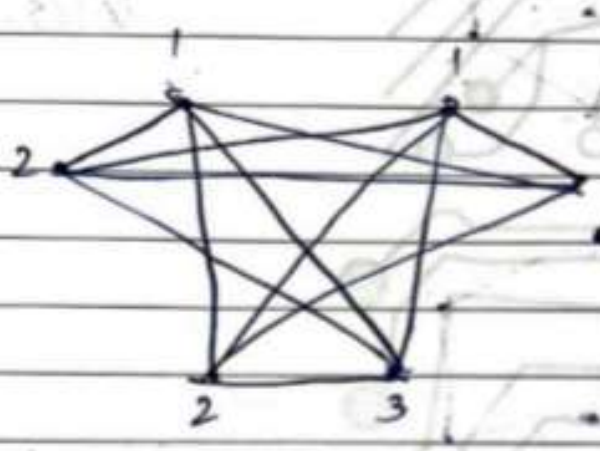
③ a z ✓
b y ✓
c v ✓
d w ✓
e x ✓
f u ✓


a —> z
b —> y
c —> v
d —> w
e —> m
f —> u

## Question no. 5

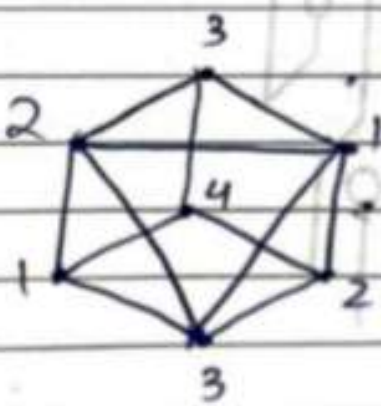



Chromatic number = 2
Equitable coloring shown



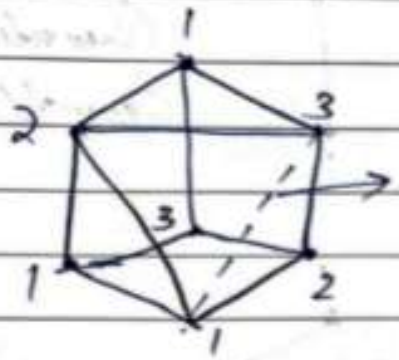

Chromatic number = 3
← Equitable coloring shown

## Question no. 6(i)

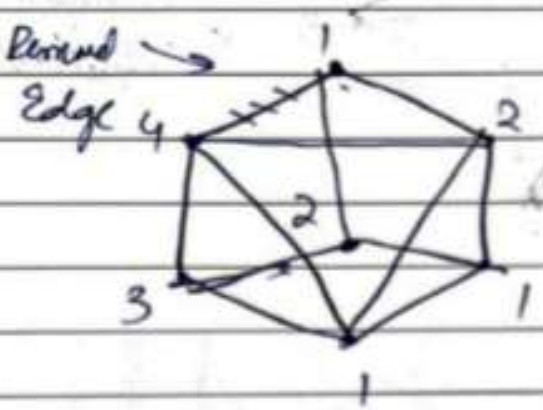



$\chi(G) = 4$

Question no. 6 (ii)



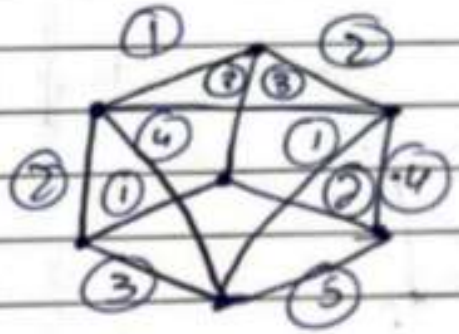

$\chi(G) = 3$




$\chi(G) = 4$

$(\chi(G-e) = \chi(G) - 1$ is not true for all edges)

(iii)

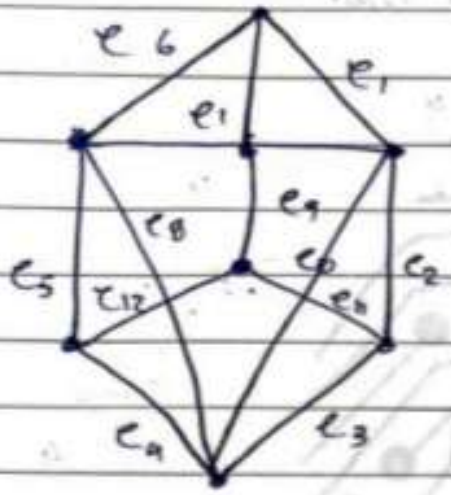


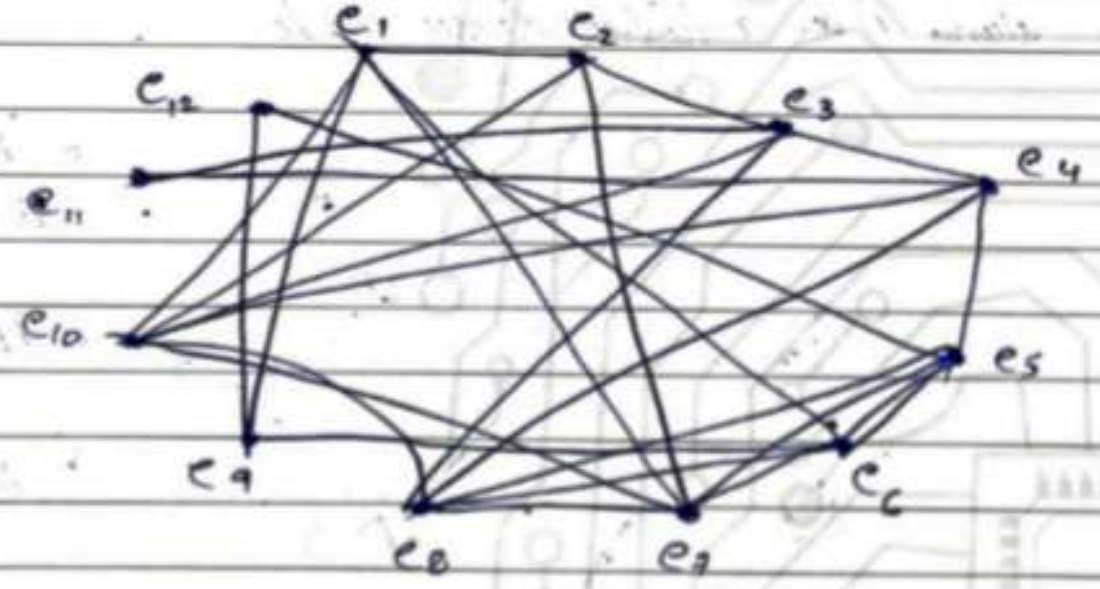

$\chi'(G) = 5$

$\Delta G = 4$

Theorem: $\underset{4}{\Delta G} \leq \underset{5}{\chi'(G)} \leq \underset{4+1}{\Delta(G)+1}$ proved.

iv)



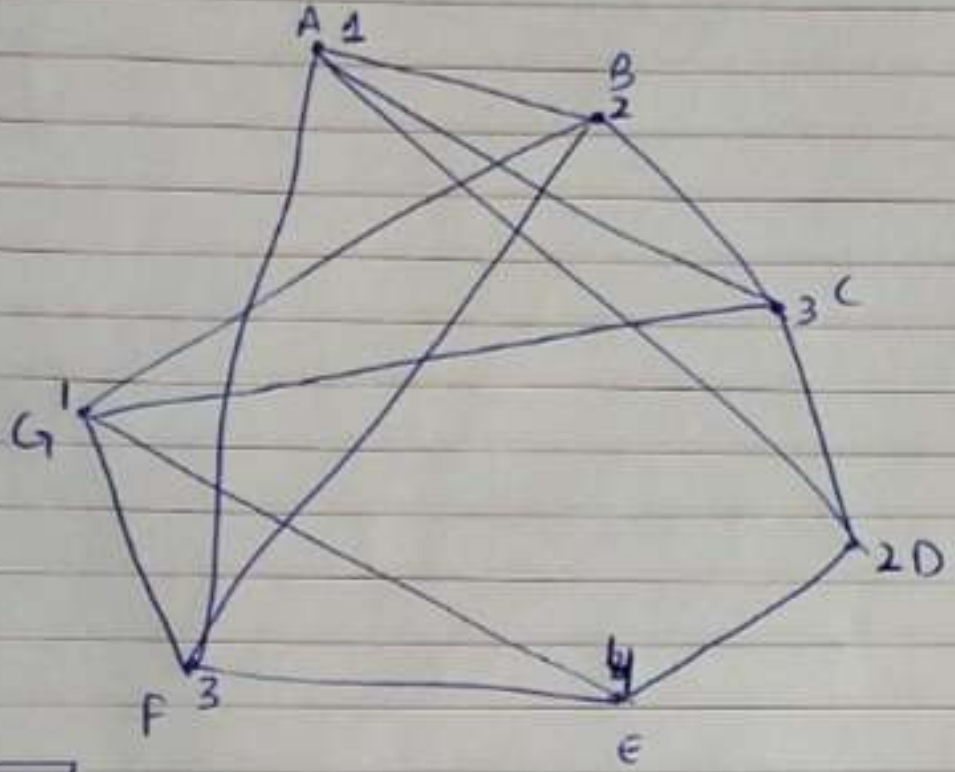

v) $\chi(G)$ of line graph : 5

$\chi(G)$ of line graph : $\chi'(G)$

$5 \leq 5$

verified

Q7.

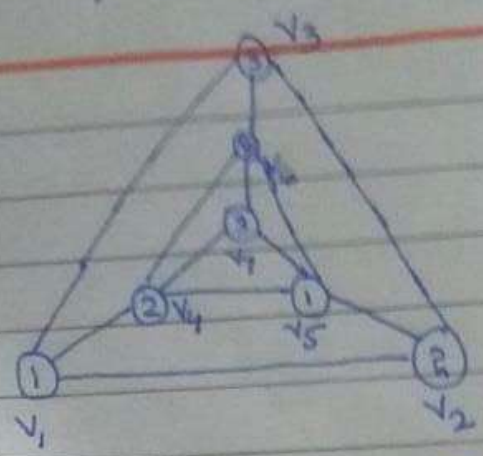



ans = 4

Q # 08

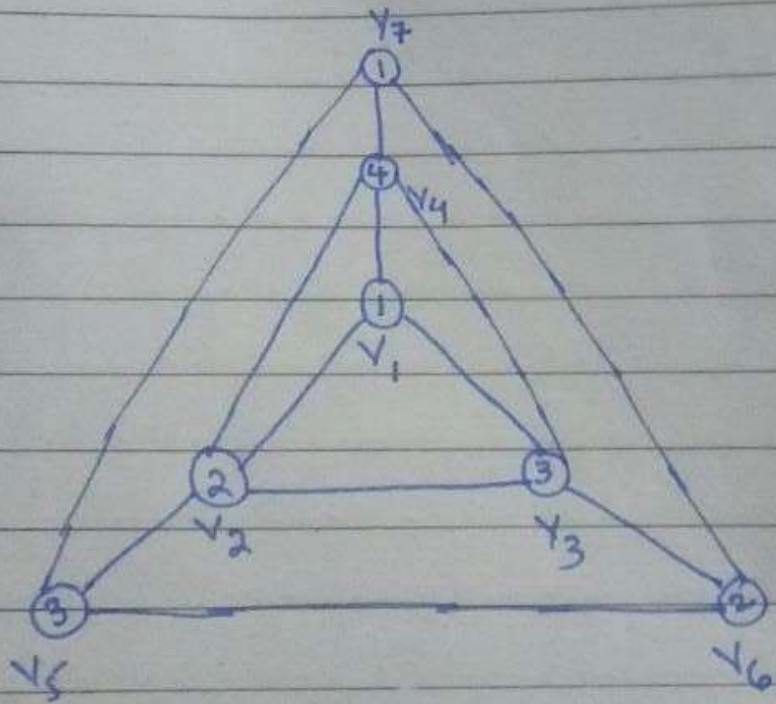
Date:

a)




. In case a 4 number of colors were produced.

b)




. In case b 4 number of colors were also produced