⇒ Isomorphism of graphs:- means mapping b/w two graphs
$G_1 = (V_1, E_1)$,

$G_2 = (V_2, E_2)$ → simple graphs

$f: V_1 \to V_2$

it must be one-one and onto

1) f – one-one, onto.

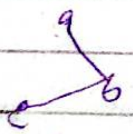
2) $\{a, b\} \to$ edge $\Rightarrow \{f(a), f(b)\}$ – edge

[Relation of adjacency is preserved]

⇒ G_1 and G_2 are isomorphic.

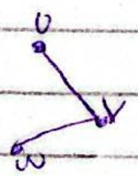
→ mean if we have 2 vertices in any graph

ex

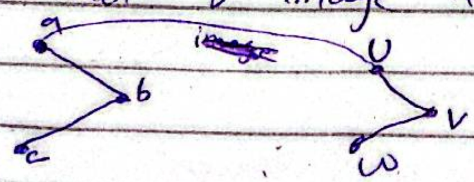


here a and b b/w edge occur.

so if we have another graph like



so assume that a image have u and b image have v so like.



so if we have image b/w a and v, so we must have the edge b/w v_1 and v_2 and that should be for every edge.

Simple
if a and b b/w have edge then must have U and V.

then we said the Relation is preserve of adjacency.

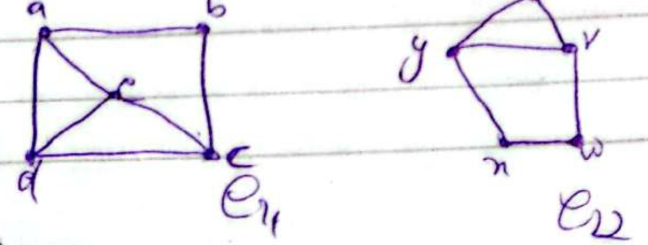
⇒ important points to show the graph is Not isomophisams-

1) if G_1 and G_2 do not have same number of vertices. then
⇒ G_1 and G_2 are not isomophisams

2) If G_1 and G_2 do not have same number of edges.
⇒ G_1 and G_2 are not isomophisam.

3) If G_1 and G_2 do not have same number of vertices of degree.
d ⇒ G_1 and G_2 are not isomorphic

exs-



1. in g_1 have same vertice as g_2 ✓
2. edges are same in $g_1 = 6$ and $g_2 = 6$
3. check degree two vertex, present in g_1 which is 6.

in g_1 6 is the only(1) vertex whose degree is 2.

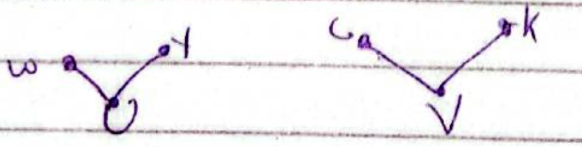
in g_2 if we check the vertices whose degree 2, then there are 3 vertices whose degree is 2.

so g_1 have 1 vertice with degree 2.
and g_2 have 3 Vertices with degree 2

Hence it is not isomorphism ~~thats why it~~

4th point:- if $f(u) = v$ and degree
image of $u = v$
of vertices to u are not equal to the degree of vertices adjacent to $v \Rightarrow G_1$ and G_2 are not isomorphic.

means:- u and v vertice degree must be equal



like u = 2 degree and v = 2 deg

but other vertex like W and Y (adjacent of U vertice, if have differt degrees.
then still it will not considred it is isomorphism.

examples:-

ex:- take the vertex f, and see what is the degree
of f has 3 vertex.
and f has image like w or z or ⊗ or
✓ because they have 3 degree.

→ assume that f has image f(f) = w.
→ Now check adjacent vertex of f.
which is e, g and b
and degree of (e) = 2
deg of (g) is 2.
deg of b = 3

and image of f is w.
and adjacent vertex of w is
z, n and y

d(z) degree 3
d(y) = = 3
d(n) = = 2

not f's degree adjacent 2, 2, and 3
and w adjacent is 3, 3, 2

means f ji w tai notho wanye seghy
aso ta nota isomorphism:- baaki
other f, ji g sai vsai check kery
agr waha b same issue aa rhai to
hence not isomorpic.

$d, g, h, \varepsilon, b, a$

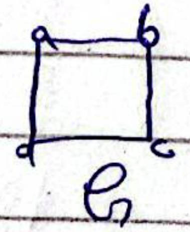
$A \to da \mid BC$ $\qquad d, g, h, \varepsilon$

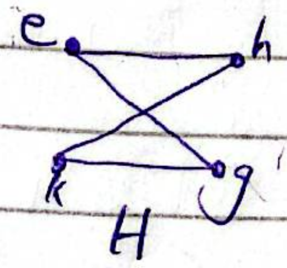
$B \to g \mid \varepsilon$ $\qquad g, \varepsilon$

$C \to h \mid \varepsilon$ $\qquad h, \varepsilon$

⇒ Given that show that G and H are isomorphic.

ex:-





so)

$a \to e$ $\qquad f(a) = e,\ f(b) = k,\ f(c) = h,\ f(d) = g$

$b \to k$ $\qquad f$ — one-one onto map b/w

$c \to h$ $\qquad$ vertex sets.

$d \to g$ $\qquad$ Relation of adjacency is preserved

Hence

G and H are isomorphic.