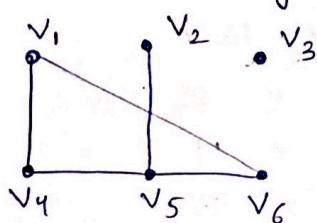


## Assignment 1 (solutions)

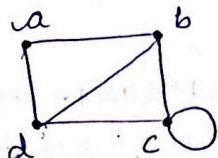
A-1)  
(a)



Note: There are different ways in which you can draw.

(b)  $v_3$  is the isolated point.

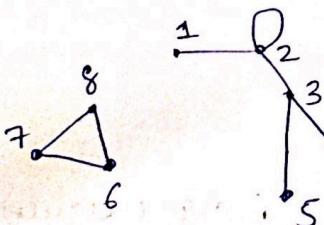
A-2)



$$\begin{aligned} \text{Vertices} &= \{a, b, c, d\} \\ \text{Edges} &= \{ab, ad, bc, bd, cd, cc\} \end{aligned}$$

No, it is not a simple graph ( $\because$  loop at vertex c)

A-3)



Note: There are many ways to draw a graph.

A-4)

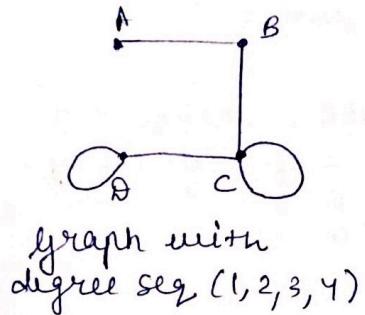
Degree sequence =  $(1, 2, 3, 4)$

$\therefore$  no. of vertices is  $\boxed{4}$

Let  $V$  be the vertex set

$$\sum_{v \in V} \deg v = 1 + 2 + 3 + 4 = 10$$

$\therefore$  by handshaking lemma,  
no. of edges =  $\frac{10}{2} = 5$



A has degree 1.

B	"	"	2
C	"	"	4
D	"	"	3

No, there are no simple graphs with degree sequence (1, 2, 3, 4).

[A simple graph with atleast 2 vertices has 2 or more vertices of same degree]

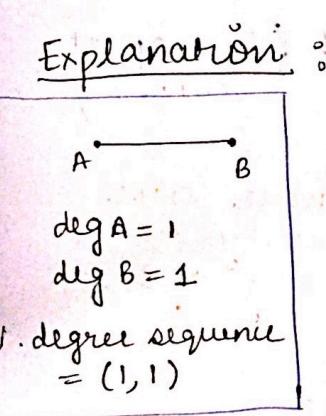


Figure 1

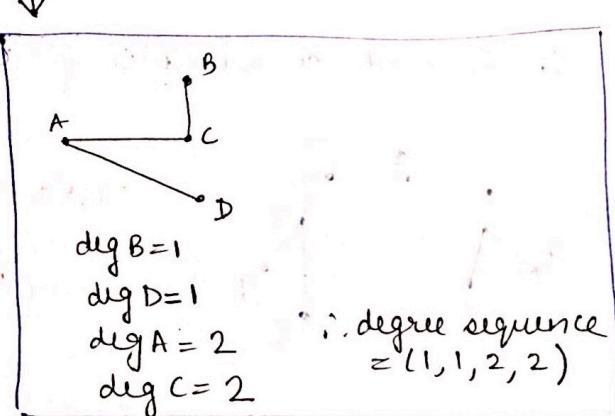
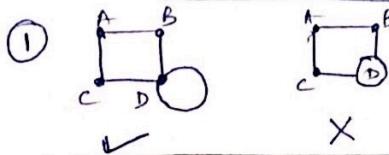


Figure 2

Since in above degree sequence i.e. (1, 2, 3, 4) no two degrees are repeating,  
it is impossible to draw simple graph with the given degree sequence.

### Common Mistakes



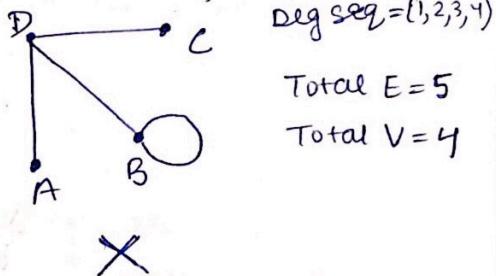
②

NO. of edges = 2  
Total degree = 3

There is only one edge.

A is incident to one edge only.  
 $\deg A = 2$

③ In Ques - 4,



④ In ques 1, many wrote no isolated point.

⑤ Somebody wrote graph is not simple because of loops & multiple edges

In ques 2.

