

1. a. $V = \{1, 2, 3, 4\}$

$E = \{(1, 2), (2, 3), (1, 3), (1, 3), (2, 4), (3, 4), (3, 4), (3, 3)\}$

b. $V_1 = V_2, V_3$

$V_2 = V_1, V_3, V_4$

$V_3 = V_1, V_2, V_3, V_4$

$V_4 = V_2, V_3$

c. $e_1 = V_1, V_2$

$e_2 = V_2, V_3$

$e_3 = V_1, V_3$

$e_4 = V_1, V_3$

$e_5 = V_2, V_4$

$e_6 = V_3, V_4$

$e_7 = V_3, V_4$

$e_8 = V_3$

d. $d(1) = 3$

$d(2) = 3$

$d(3) = 6$

$d(4) = 3$

e. $3 - e_8 - 3 - e_3 - 1 - e_4 - 3$

$3 - e_8 - 3 - e_4 - 1 - e_3 - 3$

$3 - e_8 - 3 - e_6 - 4 - e_7 - 3$

$3 - e_8 - 3 - e_7 - 4 - e_6 - 3$

$2 - e_1 - 1 - e_3 - 3 - e_4 - 1$

$2 - e_5 - 4 - e_6 - 3 - e_7 - 4$

f. $3 \ e_8 \ 3 \ e_3 \ 1 \ e_4 \ 3$

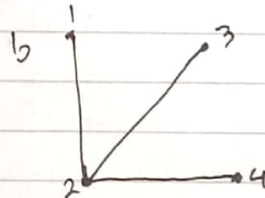
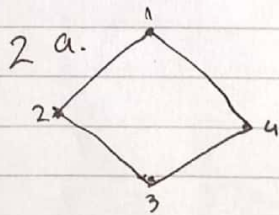
$3 \ e_8 \ 3 \ e_4 \ 1 \ e_3 \ 3$

$3 \ e_8 \ 3 \ e_6 \ 4 \ e_7 \ 3$

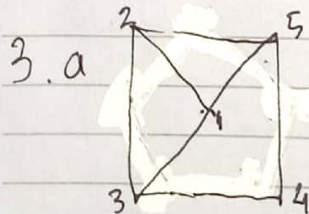
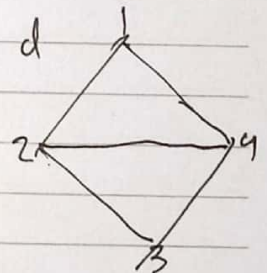
$3 \ e_8 \ 3 \ e_7 \ 4 \ e_6 \ 3$

$2 \ e_1 \ 1 \ e_3 \ 3 \ e_6 \ 4 \ e_5 \ 2$

$2 \ e_5 \ 4 \ e_6 \ 3 \ e_3 \ 1 \ e_1 \ 2$

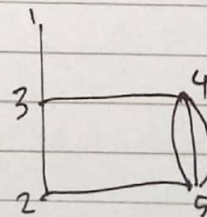
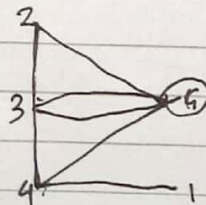
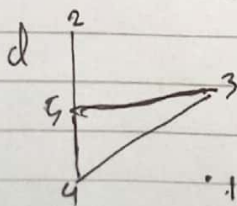


c. It is impossible because to make a vertices same odd number of degree, a pair is made in return.



b. the graph is impossible to be made since the sum of the degrees are odd

c. the sum of the edge makes it impossible to have the amount of degree for every vertices



4. it is used in PCB making, database, and public transport network