21BCE10962

Q.2

BMW

a) let $K_{2,3}$ have bipartition, where $B = \{a, b\}$ & $W = \{x_1, x_2, x_3\}$. suppose T is a spanning tree of $K_{2,3}$.
If possible that in T there is no vertex x_i, which joins to both a & b.

Then each of the vertex x_1, x_2, x_3 joins to at most one of the a or b.
There are only 3 edges in T. which is contradiction to the fact that any spanning tree of $K_{2,3}$ contains exactly 4 edges.

(b) Since we have formula for number of spanning trees for $K_{m,n}$ is
$m^{n-1} \cdot n^{m-1}$.

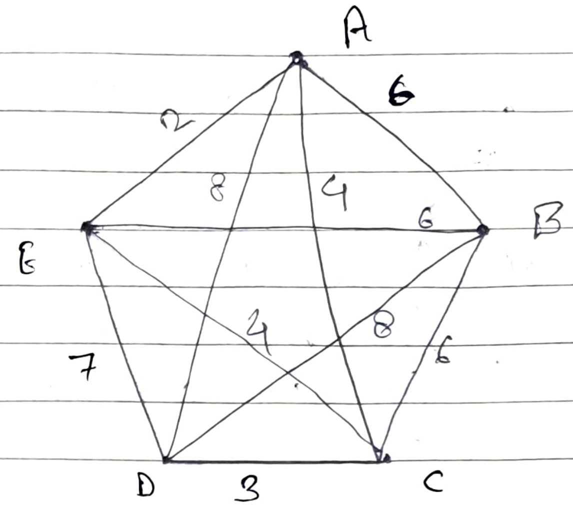
$\therefore$ no of spanning tree for $K_{2,3} = \boxed{2^2 \cdot 3^1 = 12}$

(c) $m^{n-1} \cdot n^{m-1}$ for $m = 2, n = 100$

we have no. of spanning trees for

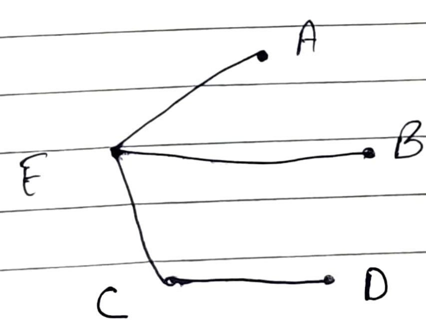
$\boxed{K_{2,100} = 2^{99} \cdot 100^1}$ =

Q.3



Step-(1) Select initial vertex - A

Step	vertex that may add	edges	weight
	E	AE	2
II	B	AB	6
	C	AC.	4
	D	AD	8
III	B	AB, EB	6, 6
	C	AC, EC	4, 4
	D	AD, ED	8, 7
IV	B	AB, EB, BC	6, 6, 6
	D	AD, ED, CD	8, 7, 3
V	B	AB, EB, BD, BC	6, 6, 8, 6



minimum weigh = 15

Q.4
(c) Will be planer, no lines are crossing each other.

Q.5 let us assume that G is an euler graph which means that there will an euleraian line and G contains a closed walk covering all edges.

In a closed walk every time the walk meets a vertex V. It goes through two new edges, incident on V with one ~~two~~ entered, and with the other we, exited.

This is true for all the vertices Because it is a closed walk.

Therefore. the degree of every vertex is even.