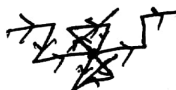


- Q1. The number of connected components in a connected graph is..... 1 (1)
- Q2. The vertex connectivity of a disconnected graph is (1)
- Q3. How many spanning subgraphs of a graph G are also vertex induced? Explain. 1 (2)
- Q4. Argue that the shortest walk between two vertices is a path.  (3)
- Q5. $G=(V,E)$ is a simple graph. Show that $2|E| \leq |V^2| - |V|$. (3)
- Q6. How many perfect matchings are there in a complete graph of 6 vertices? $\frac{6 \times 3 \times 2}{2}$ (3)
- Q7. How many edges would the complement of a complete bipartite graph $K_{m,n}$ have? $n \text{ edges in } K_m + n \text{ edges in } K_n$ (3)
- Q8. A relation R is defined on the set of integers as xRy iff $(x+y)$ is even. Is R an equivalence relation?
If yes, how many equivalence classes does it have? 2 (4)

Spanning subgraphs
- vertex set frozen
- edges may be dropped
vertices induced
- flexibility
- no flex