

b) Show that $S \vee R$ is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$. **(5 Marks)**

c) Show that $P \rightarrow Q \equiv (P \rightarrow Q) \wedge (Q \rightarrow P) \equiv (P \wedge Q) \vee (\equiv \sim P \wedge \sim Q)$. **(5 Marks)**

7. a) Show that K_7 has Hamiltonian graph. How many edge disjoint Hamiltonian cycles are there in K_7 ? List all the edge-disjoint Hamiltonian cycles. Is it Eulerian graph? **(10 Marks)**

b) Draw a graph that is both Eulerian and Hamiltonian. **(10 Marks)**