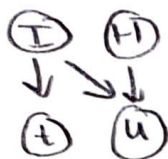
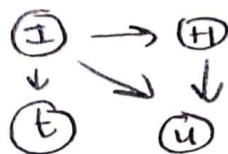


# Problem 4

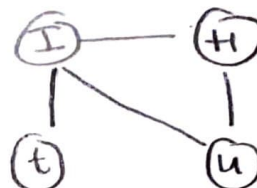
4.1) Step 1: Ancestral



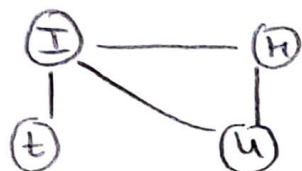
Step 2: Normalize



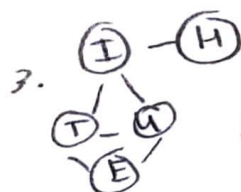
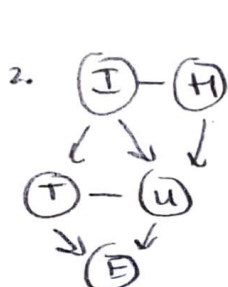
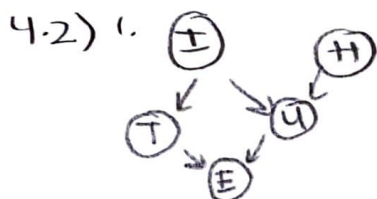
Step 3: Disorient



Step 4: Remove gen

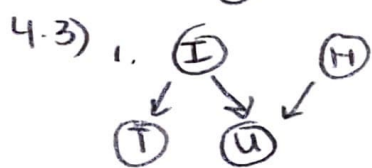


observe path from  $t$  to  $u$  so not independent  $t \not\perp u$

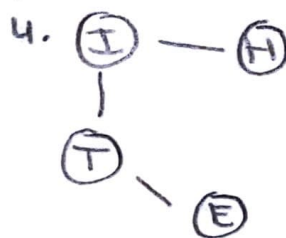
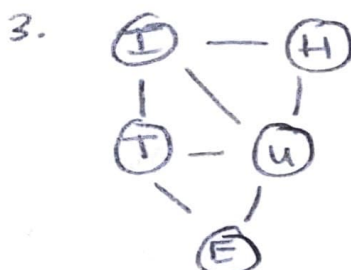
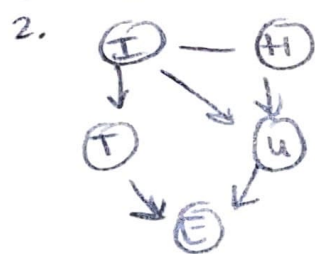
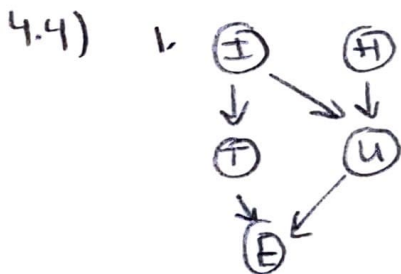


4.  $T \perp U$

5.  $T$  and  $U$  are not conditionally independent b/c path from  $T$  to  $U$ .

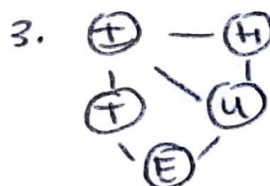
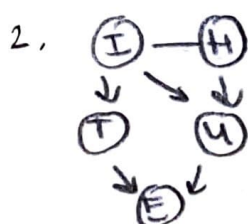
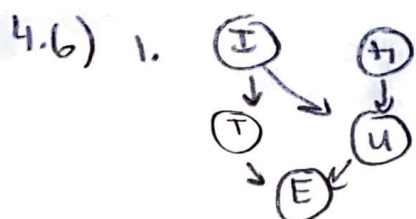


4.  $T \perp U$  Since there is no path from  $T$  to  $U$  they are conditionally independent



5.  $E \not\perp H | U$  since path from  $E$  to  $H$

4.5) Steps 1-3 above (4.4) are the same. 4.  $H$   
5.  $E \perp H | U, I, T$



5.  $I \not\perp H | E$