**Students JHID : qgao6 llin34**

**Grader: Can Zhao**

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| --- | --- | --- | --- |
|  | Full points | Your points | Comments |
| 2.1.1 | 14 | 14 |  |
| 2.1.2 | 6 | 6 |  |
| 2.2.1(1) | 8 | 2 | “altering Z’s CPD cannot affect P(X|Y), then  there is no active trail from Z to X given Y” was wrong. |
| 2.2.1(2) | 8 | 2 | “Since Z’ is a parent of Z, we can find an active trail from  Z’ to X given Y” was wrong. |
| 2.3(1) | 8 | 8 |  |
| 2.3(2) | 4 | 4 |  |
| Total | 48 | 36 |  |

## Grading Details:

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|  | Full points | Comments |
| 2.1.1 | 14 | If student forgot the edge between MaryVaccinated and JohnGetsFlu, then get 10pts |
| 2.1.2 | 6 |  |
| 2.2.1(1) | 8 | **Why did we add Z\_hat to the graph? Because changing the value of Z\_hat is equivalent to changing the CPD of Z. That is the inherent thought of this question.**  In other words, Z\_hat is used to change Z’s CPD, not Z’s value.  Can be proved by contradiction.  Some students tried to prove that Z and X are dependent given Y. However, even if it’s true, it only means altering Z’s value can affect P(X|Y). It does not indicate that altering Z’s CPD can also affect P(X|Y). This is already discussed on piazza. <https://piazza.com/class/ij36p31qnzp77l?cid=297>  If student made the mistake above, and the conclusion was based on this wrong claim, then only get 1-2pt.  If student didn’t make such mistake, and correctly list some cases, then get 3-8 pts.  If student mentioned the inherent thought, at least 5pts. |
| 2.2.1(2) | 8 | Can be proved by contradiction.  Some students tried to prove that Z and X are independent given Y. However, Z\_hat and X are independent given Y does not indicate that Z and X are independent given Y.  Consider Y is empty. A graph: Z\_hat -> Z <- X (Z not observed)  If student made the mistake above, and the conclusion was based on this wrong claim, then only get 1-2pt.  If student didn’t make such mistake, and correctly list some cases, then get 3-8 pts. |
| 2.3(1) | 8 |  |
| 2.3(2) | 4 |  |