1. (8 points) Which of the following statements are true about the Hohfeldian concepts?

A. If a reader has a “right” to access a document, that means the reader has a privilege (with respect to the document owner) to access the document

**Solution:** A is true: the document owner can’t stop the reader

B. If a buyer has a “right” to receive goods, that means the buyer has a claim (with respect to the seller) to receiving the goods

**Solution:** B is true: the seller must deliver the goods

C. If a buyer has a “right” to demand a refund, that means the buyer has an exposure (with respect to the seller) to receiving the refund

**Solution:** C is false: the buyer has the power to demand a refund

D. Immunity is a correlate of power

**Solution:** D is false: immunity is a correlate of disability

2. (8 points) Identify all of the following statements that are true with respect to vector clocks and asynchronous messaging

A. The sender of a message doesn’t know if the message has been received unless the receiver sends back an acknowledgment

**Solution:** A is false: there may be no acknowledgment as long as there is a chain of messages that ends back at the sender; if the original sender receives a message with a clock vector greater than that message it sent, that clock vector has the proof its original message was received

B. Stating commitments precisely removes the need for maintaining and exchanging vector clocks

**Solution:** B is false: precision doesn’t take away the problems due to asynchrony

C. When we compare two clock vectors, we can determine either that they are equal or that one is later than the other

**Solution:** C is false: some vector clock values may be incomparable (neither greater than or equal to the other for each element)

D. Suppose agent A first sends a message $m_{A,B}$ to agent B and then sends a message $m_{A,C}$ to agent C; a feature of vector clocks is that B’s vector clock upon receiving $m_{A,B}$ is smaller than C’s vector clock upon receiving $m_{A,C}$

**Solution:** D is false: who knows when $m_{A,B}$ and $m_{A,C}$ are received and whether B and C have chains of messages going from one to the other in the intervening time

3. (8 points) Which of the following statements are true about interaction and communication?
A. Perlocutions are considered the core aspect of a communicative act

Solution: A is false: illocutions are the core aspect of a communicative act

B. The same proposition, e.g., reserve(Alice, UA 872, 14 May 2009), may feature in a request and an inform

Solution: B is true: that’s the idea of separating the illocution type from the propositional content

C. We may not be able to decide if a statement such as Shut the door! is true or false but we can decide whether such a statement was made

Solution: C is true: the making of the statement is a matter of fact, so it is true or false

D. A statement such as Shut the door! becomes true if the door in question is shut on purpose, not accidentally

Solution: D is false: nothing to do with purpose or whatever

4. (10 points) Identify all of the following statements that are true about commitments and commitment protocols

A. If the debtor of a commitment delegates it simultaneously with the creditor of the same commitment assigning it, additional messages are in general needed for the new debtor and the new creditor to learn about each other

Solution: A is true: otherwise the parties concerned won’t know

B. If the debtor of a commitment discharges it simultaneously with the creditor of the same commitment assigning it, no additional messages are needed for the new creditor to learn about that the debtor is compliant

Solution: B is false: otherwise the parties concerned won’t know

C. A protocol for payment through a third party could naturally be specified using the delegate of a commitment to pay

Solution: C is true:

D. Forward-going interactions such as ordering and payment may be modeled as commitment protocols, but not backward-going interactions such as returning goods for a refund

Solution: D is false: backward-going interactions can also be described in terms of commitments

E. Even though a commitment protocol captures the meanings of the messages involved, the participants must accept the protocol in order for it to work

Solution: E is true: if they don’t accept the protocol, they won’t do business with it

5. (6 points) Which of the following statements are true about service selection?
A. The protocol roles that a service can play can be used as selection criteria

Solution: A is true:

B. You can perform service discovery through a registry, but service selection is necessarily distributed

Solution: B is false: no reason to distribute service selection

C. Setting up a multiparty service engagement, such as a real-estate transaction, can be understood as instantiating a sphere of commitment

Solution: C is true: service engagements can be modeled as occurring within spheres of commitment