

Study Guide: Cumulative Final

Due Date: Thursday, May 29th, 2025 (BY CLASS TIME)

1. Chapter 1

a. Definitions

- i. Statement
- ii. Argument
- iii. Truth Value
- iv. Valid argument
- v. Sound argument
- vi. Unsound argument
- vii. Argument form
- viii. Counterexamples

b. True or false

- i. If an argument has all true premises and a true conclusion, it is valid.
- ii. If an argument has all true premises and a true conclusion, it is sound.
- iii. All sound arguments have a true conclusion.
- iv. If an argument has all true premises it must have a true conclusion.
- v. If a valid argument has all true premises it must have a true conclusion.
- vi. All unsound arguments are invalid.
- vii. All invalid arguments are unsound.
- viii. If an argument has all true premises and a false conclusion, it is invalid.
- ix. If I cannot find a counterexample, I can know for sure that the argument is valid.

c. Famous forms:

- i. 1F II
1. ALL

d. Counterexamples:

- i. 1F I
1. 2-9 and 16 to 20

2. Chapter 4

a. Physical Book

- i. Ch. 4B, 4C, 4D
1. I and II
- a. Even

b. Archie Book

- i. 4.1, 4.2, 4.3
1. A All

3. Chapter 5 and 6

a. For the following Categorical Statements identify:

1. Type of statement (A, E, I, O)
 2. Quantity
 3. Quality
 4. Subject Term
 5. Predicate Term
 6. Copula
 7. Standard form: if it is not in standard form, please, write it so it is
-
- ii. Nothing is an elephant unless it is not a monkey
 - iii. Some dogs are animals that jump
 - iv. Something is a car and a vehicle
 - v. Something is a bicycle and not a helicopter
 - vi. Something exists that it is a backpack, but not a purse
 - vii. If anything is a cat, then it is a mammal
 - viii. All humans know how to swim
 - ix. If anything is a Golden Retriever, then it is not a lion
 - x. No cats are beautiful

b. State whether the following immediate inferences are valid or invalid. Create a set of Venn Diagrams for the premise and another one for the conclusion

- i. It is false that all thrones are chairs. Therefore, some thrones are not chairs.
- ii. Nothing is a desk unless it is not a chair. Therefore, some desks are not chairs.
- iii. Some lions are cats. Therefore, all lions are cats.
- iv. It is false that some people are not people that like to sing. Therefore, all people are people that like to sing.
- v. All cats are mammals. Therefore, it is not true that no mammals are cats.

c. State whether the following Categorical Syllogisms are in standard form. If they are not, please, write them so they are

- i. All dogs are animals. Some animals are cats. Therefore, some animals are not dogs.
- ii. Something is a cat and not a mammal. If anything is a mammal, then it is furry. Therefore, all furry things are cats.
- iii. No cars are bicycles. No bicycles are helicopters. Therefore, some cars are not helicopters.
- iv. Nothing is a fish unless it is not a whale. Some whales are mammals. Therefore, some mammals are not fish

- d. State whether the following arguments are valid or invalid by creating a Venn Diagram
- i. All dogs are animals. Some animals are cats. Therefore, some animals are not dogs.
 - ii. Something is a cat and not a mammal. If anything is a mammal, then it is furry. Therefore, all furry things are cats.
 - iii. No cars are bicycles. No bicycles are helicopters. Therefore, some cars are not helicopters.
 - iv. Nothing is a fish unless it is not a whale. Some whales are mammals. Therefore, some mammals are not fish
 - v. All P are M. Some M are S. Therefore, Some S are P.
 - vi. Some M are P. No M are S. Therefore, no S are P.
 - vii. All M are P. All S are M. Therefore, All S are P.
 - viii. All P are M. All M are S. Therefore, All S are P.

4. Chapter 7

- a. Well-Formed Formula
 - i. 7.1 A and B
 - 1. ALL
- b. Symbolizing
 - i. 7.1 E
 - 1. ALL
- c. Truth Values
 - i. 7.2 A and C
 - 1. Even
- d. Truth Tables
 - i. 7.3 B
 - 1. Even
- e. Abbreviated Truth Tables
 - i. 7.4 B
 - 1. ALL

f. Tautologies, Contradictions, Contingencies and Logical Equivalence

i. Definitions

1. Tautology
2. Contradiction
3. Contingency
4. Logical Equivalence

ii. True or false

1. If the conclusion of an argument is a tautology, the argument is invalid.
2. If one of the premises is a contradiction, then the argument is invalid.
3. If the conjunction of the premises is a contradiction, then the argument is valid.
4. If the premise and the conclusion are logically equivalent statements, the argument is valid.
5. If the conditional made by the conjunction of the premises and the conclusion is a contingency, then the argument is invalid.

5. Truth trees

- a. 7.4 C
 - i. ALL

6. Chapter 8

- a. 8.1 A, C, D
 - i. Even
- b. 8.2 A, C, D
 - i. Even
- c. 8.3 A, C, D
 - i. Even