Exercise 5.1

Part I

1. Major term: things that produce intense gravity.
   Minor term: extremely dense objects.
   Middle term: neutron stars.
   Mood, figure: AAA-3; invalid

2. Major term: insects that should be killed.
   Minor term: dragonflies.
   Middle term: insects that eat mosquitoes.
   Mood, figure: EAE-1; valid

   Minor term: psychological disorders.
   Middle term: inherited afflictions.
   Mood, figure: EOI-2; invalid

   Minor term: hypnotized persons.
   Middle term: persons who mix fact with fantasy.
   Mood, figure: EIO-1; valid

5. Major term: good absorbers of ultraviolet rays.
   Minor term: things destroyed by chlorine.
   Middle term: ozone molecules.
   Mood, figure: AAI-3; valid

Part II

1. All B are D.
   No R are D.
   No R are B.
2. No K are Y.
   Some Y are L.
   Some L are not K.
   **EIO-4**
   Valid

3. All W are M.
   No R are W.
   Some R are M.
   **AEI-1**
   Invalid

4. No M are F.
   All M are I.
   Some I are not F.
   **EAO-3**
   Valid

5. Some M are I.
   No I are P.
   Some P are M.
   **IEI-4**
   Invalid

6. All C are U.
   Some A are not U.
   Some A are not C.
   **AOO-2**
   Valid

7. All P are E.
   All L are P.
   Some L are E.
   **AAI-1**
   Invalid

8. Some H are not P.
   No H are R.
   Some R are not P.
   **OEO-3**
Invalid

9. No P are T.
   All A are T.
   No A are P.
   EAE-2
   Valid

10. Some O are not C.
    All S are O.
    Some S are C.
    OAI-1
    Invalid

Part III

1. Some M are not P.
   All M are S.
   No S are P.

2. No P are M.
   Some M are S.
   All S are P.

3. All M are P.
   Some M are S.
   Some S are P.

4. Some M are P.
   All S are M.
   No S are P.

5. All P are M.
   Some S are not M.
   Some S are not P.

6. No P are M.
   All M are S.
   Some S are not P.

7. All M are P.
   All S are M.
   All S are P.

8. No P are M.
All S are M.
Some S are not P.

9. Some M are not P.
   No M are S.
   Some S are P.

10. Some P are not M.
    No M are S.
    All S are P.

Part IV

1. No dogmatists are scholars who encourage free thinking.
   Some theologians are scholars who encourage free thinking.
   Some theologians are not dogmatists.

2. All lock step ideologues are persons incapable of objectivity.
   Some Supreme Court justices are lock step ideologues.
   Some Supreme Court justices are persons incapable of objectivity.

3. All teenage suicides are tragic occurrences.
   No tragic occurrences are heroic episodes.
   No heroic episodes are teenage suicides.

4. Some viruses are not things capable of replicating by themselves.
   All viruses are structures that invade cells.
   Some structures that invade cells are not things capable of replicating by themselves.

5. No legally enforceable documents are guarantees of marital happiness.
   All prenuptial agreements are legally enforceable documents.
   No prenuptial agreements are guarantees of marital happiness.

Part V

1. False  6. False
2. False  7. True
3. True  8. True
4. False  9. True
5. True  10. True

Exercise 5.2
Part I

1. All C are U.
   Some U are I.
   Some I are C.
   **AII-4**
   Invalid

2. No A are P.
   Some K are A.
   Some K are not P.
   **EIO-1**
   Unconditionally valid

3. No I are P.
   All T are P.
   Some T are not I.
   **EAO-2**
   Valid, Aristotelian

4. All H are D.
   Some D are not P.
   Some P are not H.
   **AOO-4**
   Invalid

5. No C are S.
   No S are Q.
   No Q are C.
   **EEE-4**
   Invalid

6. All D are E.
   All C are D.
   All C are E.
   **AAA-1**
   Unconditionally valid

7. No P are I.
   All F are I.
   No F are P.
   **EAE-2**
   Unconditionally valid
8. Some I are not M.  
   Some P are I.  
   Some P are not M.  
   OIO-1  
   Invalid

9. Some A are P.  
   All P are N.  
   Some N are A.  
   IAI-4  
   Unconditionally valid

10. No C are O.  
    Some D are not O.  
    Some D are not C.  
    EOO-2  
    Invalid

11. All C are P.  
    All C are T.  
    Some T are P.  
    AAI-3  
    Invalid

12. All S are O.  
    All Q are O.  
    All Q are S.  
    AAA-2  
    Invalid

13. No P are W.  
    All D are P.  
    No D are W.  
    EAE-1  
    Unconditionally valid

14. Some I are P.  
    Some S are I.  
    Some S are P.  
    III-1  
    Invalid

15. Some C are R.
16. All C are G.
   All G are E.
   Some E are C.
   **AAI-4**
   Invalid

17. All S are P.
   No P are O.
   All O are S.
   **AEA-4**
   Invalid

18. No P are I.
    Some C are P.
    Some C are not I.
    **EIO-1**
    Unconditionally valid

19. No A are I.
    All A are N.
    Some N are not I.
    **EAO-3**
    Valid, Aristotelian

20. Some S are not U.
    All S are C.
    Some C are not U.
    **OAO-3**
    Unconditionally valid

Part II

1. No P are M.
   All S are M.
   No S are P.

2. Some P are not M.
   Some M are S.
3. Some M are P.
   All S are M.
   No conclusion.

4. Some M are not P.
   All M are S.
   Some S are not P.

5. Some P are M.
   All M are S.
   Some S are P.

6. No M are P.
   Some S are not M.
   No conclusion.

7. All M are P.
   All S are M.
   All S are P.

8. All P are M.
   All S are M.
   No conclusion.

9. No P are M.
   Some M are S.
   Some S are not P.
10. No P are M.
   \[ \text{No M are S.} \]
   No conclusion.

Part III

1. False  
2. True  
3. True  
4. True  
5. True  
6. False  
7. False  
8. True  
9. True  
10. False

Exercise 5.3

Part I

1. All M are P.
   \[ \text{All M are S.} \]
   \[ \text{All S are P.} \]
   Invalid
   Illicit minor

2. Some P are M
   \[ \text{All S are M.} \]
   \[ \text{Some S are P.} \]
   Invalid
   Undistributed middle

3. No M are P.
   \[ \text{Some S are M.} \]
   \[ \text{Some S are not P.} \]
   Unconditionally valid
   No rules broken.

4. All P are M.
   \[ \text{All S are M.} \]
   \[ \text{Some S are P.} \]
   Invalid
   Undistributed middle; existential fallacy
5. Some M are P.
   No S are M.
   Some S are not P.
   Invalid
   Illicit major

6. No P are M.
   Some M are not S.
   Some S are not P.
   Invalid
   Exclusive premises

7. No M are P.
   All S are M.
   All S are P.
   Invalid
   Drawing aff. concl. from from neg. prem.

8. All M are P.
   Some M are S.
   Some S are P.
   Unconditionally valid
   No rules broken.

9. All P are M.
   All M are S.
   Some S are P.
   Conditionally valid
   Existential fallacy, Boolean Valid, Aristotelian, if P exists.

10. Some M are P.
    All M are S.
    Some S are not P.
    Invalid
    Illicit major; drawing neg. concl. from aff. premises

11. All P are M.
    Some S are M.
Some S are P.
Invalid
Undistributed middle

12. All M are P.
   Some M are S.
   Some S are not P.
   Invalid
   Illicit major; drawing
   neg. concl. from aff.
   premises

13. All P are M.
    No M are S.
    No S are P.
    Unconditionally valid
    No rules broken.

14. No P are M.
    All M are S.
    No S are P.
    Invalid
    Illicit minor

15. No M are P.
    All M are S.
    Some S are not P.
    Conditionally valid
    Existential fallacy, Boolean
    Valid, Aristotelian, if M exists.

16. No M are P.
    No S are M.
    No S are P.
    Invalid
    Exclusive premises

17. No M are P.
    All S are M.
    No S are P.
    Unconditionally valid
    No rules broken.

18. Some M are not P.
All M are S.
Some S are P.
Invalid
Drawing aff. concl. from a neg. premise

19. All P are M.
Some S are not M.
Some S are not P.
Unconditionally valid
No rules broken.

20. No M are P.
All S are M.
Some S are not P.
Conditionally valid
Existential fallacy, Boolean
Valid, Aristotelian, if S exists.

Part II

1. Some N are C.
   Some C are O.
   Some O are N.
   Invalid
   Undistributed middle

2. No I are P.
   All C are P.
   No C are I.
   Valid
   No rules broken.

3. No E are C.
   All S are E.
   Some S are not C.
   Valid, since S exists.

4. Some C are not M.
   No C are I.
Some I are not M.
Invalid
Exclusive premises

5. All T are H.
   All T are E.
   Some E are H.
   Invalid
   Existential fallacy

6. All M are P.
   All M are L.
   All L are P.
   Invalid
   Illicit minor

7. No S are V.
   Some W are V.
   Some W are not S.
   Valid
   No rules broken.

8. All W are P.
   Some P are I.
   Some I are W.
   Invalid
   Undistributed middle

9. All I are P.
   Some E are not P.
   Some E are I.
   Invalid
   Drawing aff. concl. from a neg. premise

10. All S are M.
    All M are P.
    Some P are S.
    Valid, since S exists.
Part III

1. False 6. False
2. True 7. False
3. True 8. True
4. True 9. True
5. True 10. False

Exercise 5.4

1. Some non-T are M. (conv., obv.) Some M are not T.
   All non-I are non-M. (contrapose) All M are I.
   Some I are T. (contrapose) Some I are T.
   Invalid
   Drawing affirmative conclusion from a negative premise

2. All S are R. All S are R.
   Some non-R are C. (conv., obv.) Some C are not R.
   Some C are non-S. (obvert) Some C are not S.
   Valid

3. All non-S are non-W. (contrapose) All W are S.
   All P are W. All P are W.
   All P are S. All P are S.
   Valid

4. Some I are C. Some I are C.
   All C are non-P. All C are non-P.
   Some non-I are not P. (contrapose) Some non-P are not I.
   Invalid
   Illicit major; drawing negative conclusion from affirmative premises

5. All W are non-D. (obvert) No W are D.
   All D are non-S. (obvert) No D are S.
   No non-W are S (conv., obv.) All S are W.
   Invalid.
   Exclusive premises; drawing affirmative conclusion from negative premises

6. No F are D. No F are D.
   No non-F are C. (conv., obv.) All C are F.
   All C are non-D. (obvert) No C are D.
   Valid
7. All non-M are non-E. (contrapose) All E are M. 
   Some P are not M. Some P are not M. 
   Some P are non-E. (obvert) Some P are not E. 
   Valid

8. All S are non-E. (obvert) No S are E. 
   Some non-S are U. (conv., obv.) Some U are not S. 
   Some U are not E. Some U are not E. 
   Invalid
   Exclusive premises

9. All D are non-I. (obvert) No D are I. 
   All non-D are non-C. (contrapose) All C are D. 
   No C are I. No C are I. 
   Valid

10. No D are V. No D are V. 
   Some S are non-D. (obvert) Some S are not D. 
   Some non-V are S. (conv., obv.) Some S are not V. 
   Invalid. 
   Exclusive premises

Exercise 5.5

1. All scientists who theorize about the nature of time are physicists. 
   All persons identical to Stephen Hawking are scientists who theorize about the nature 
   of time. 
   Therefore, all persons identical to Stephen Hawking are physicists. 
   Valid

2. All times suicide rates decline are times people's lives are better adjusted. 
   All recent years are times suicide rates decline. 
   Therefore, all recent years are times people's lives are better adjusted. 
   Valid

3. All cars purchased by environmentalists are fuel-efficient cars. 
   No Rolls Royces are cars purchased by environmentalists. 
   Therefore, no Rolls Royces are fuel-efficient cars. 
   Invalid, illicit major

4. All persons who wrote the Declaration of Independence are persons who had a big 
   impact on civilization. 
   All persons identical to Thomas Jefferson are persons who had a big impact on 
   civilization.
Therefore, all persons identical to Thomas Jefferson are persons who wrote the Declaration of Independence.
Invalid, undistributed middle

5. All institutions that teach secular humanism are institutions that teach religion.
   Some public schools are institutions that teach secular humanism.
   Therefore, some public schools are institutions that teach religion.
   Valid

6. All persons who led America into the Space age are persons who will live in history.
   All persons identical to John Glenn are persons who led America into the space age.
   Therefore, all persons identical to John Glenn are persons who will live in history.
   Valid

7. Some songs Kathleen Battle sings are Puccini arias.
   All songs Kathleen Battle wants to sing are songs Kathleen Battle sings.
   Therefore, some songs Kathleen Battle wants to sing are Puccini arias.
   Invalid, undistributed middle

8. Some interest expenses are not tax-deductible expenses.
   All home mortgage expenses are interest expenses.
   Therefore, no home mortgage expenses are tax-deductible expenses.
   Invalid, undistributed middle

9. All marriages that allow little room for growth are arrangements bound to fail.
   All marriages based on a meshing of neuroses are marriages that allow little room for growth.
   Therefore, all marriages based on a meshing of neuroses are arrangements bound to fail.
   Valid

10. All TV viewers who receive scrambled signals are viewers with a decoder.
    All persons who receive digital satellite signals are TV viewers who receive scrambled signals.
    Therefore, all persons who receive digital satellite signals are viewers with a decoder.
    Valid

11. All places icebergs are present are places threats to shipping exist.
    No places identical to the South Pacific are places icebergs are present.
    Therefore, no places identical to the South Pacific are places threats to shipping exist.
    Invalid, illicit major
12. All persons who think Africa is in North America are persons with no knowledge of geography.
   Some college students are persons who think Africa is in North America.
   Therefore, some college students are persons with no knowledge of geography.
   Valid

13. All diseases carried by recessive genes are diseases that can be inherited by offspring of two carriers.
   All diseases identical to cystic fibrosis are diseases carried by recessive genes.
   Therefore, all diseases identical to cystic fibrosis are diseases that can be inherited by offspring of two carriers.
   Valid

14. Since the first premise is an exceptive proposition, we have two arguments:

   No metals identical to mercury are solids at room temperature.
   No metals identical to cadmium are metals identical to mercury.
   Therefore, all metals identical to cadmium are solids at room temperature.
   Invalid, exclusive premises

   All metals not identical to mercury are solids at room temperature.
   All metals identical to cadmium are metals not identical to mercury.
   Therefore, all metals identical to cadmium are solids at room temperature.
   Valid
   Since one of the two arguments is valid, the original argument is valid.

15. Some times are times aversive therapy is inhumane.
   Some times are times autistic children are helped by aversive therapy.
   Therefore, some times autistic children are helped by aversive therapy are times aversive therapy is inhumane.
   Invalid, undistributed middle

Exercise 5.6
Part I

1. Premise missing: Some police chiefs fix parking tickets.

2. Conclusion missing: Plagiarism deserves to be punished.

3. Premise missing: Anyone who can play the "Hammerklavier" sonata is highly accomplished.

4. Conclusion missing: A few fraternities have no legitimate role in campus life.
5. Premise missing: Churches are nonprofit organizations.

6. Conclusion missing: Carmen was well performed.

7. Conclusion missing: Some phone calls are not from friends.

8. Premise missing: Higher life forms are organized beings.

9. Conclusion missing: Kenneth Branagh can bring Hamlet to life.

10. Premise missing: Whenever the humpback whale is overhunted, the humpback whale population decreases.

11. Conclusion missing: Human life can be sustained on the moon.

12. Conclusion missing: The Cleveland symphony has effective fund raisers.

13. Premise missing: No one who thinks that everything is governed by deterministic laws believes in free will.

14. Conclusion missing: Our client's contract to buy land is enforceable.

15. Conclusion missing: The Hubble telescope is unaffected by the atmosphere.

Part II.

1. All persons who fix parking tickets are persons who undermine the evenhanded enforcement of the law.
   Some police chiefs are persons who fix parking tickets.
   Therefore, some police chiefs are persons who undermine the evenhanded enforcement of the law.
   Valid

2. All forms of cheating are incidents that deserve to be punished.
   All cases of plagiarism are forms of cheating.
   Therefore, all cases of plagiarism are incidents that deserve to be punished.
   Valid

3. All persons who can play the “Hammerklavier” sonata are highly accomplished pianists.
   All musicians identical to Douglas Barry are persons who can play the “Hammerklavier” sonata.
Therefore, all musicians identical to Douglas Barry are highly accomplished pianists.
Valid

4. No groups that have dangerous initiation rites are groups that have a legitimate role in campus life.
   Some fraternities are groups that have dangerous initiation rites.
   Therefore, some fraternities are not groups that have a legitimate role in campus life.
   Valid

5. All organizations exempt from paying taxes are nonprofit organizations.
   All churches are nonprofit organizations.
   Therefore, all churches are organizations exempt from paying taxes.
   Invalid, undistributed middle

6. No Mozart operas are operas that were well performed.
   No operas identical to Carmen are Mozart operas.
   Therefore, all operas identical to Carmen are operas that were well performed.
   Invalid, exclusive premises and drawing affirmative conclusion from negative premises

   and

   All operas not written by Mozart are operas that were well performed.
   All operas identical to Carmen are operas not written by Mozart.
   Therefore, all operas identical to Carmen are operas that were well performed.
   Valid
   Since one of the two arguments is valid, the original argument is valid.

7. All calls from friends are calls that are welcome.
   Some phone calls are not calls that are welcome.
   Therefore, some phone calls are not calls from friends.
   Valid

8. No organized beings are things that could have evolved through merely random processes.
   All higher life forms are organized beings.
   Therefore, no higher life forms are things that could have evolved through merely random processes.
   Valid

9. All persons who can bring Hamlet to life are great actors.
   All persons identical to Kenneth Branagh are great actors.
   Therefore, all persons identical to Kenneth Branagh are persons who can bring Hamlet to life.
   Invalid, undistributed middle
10. All times the humpback whale is overhunted are times the humpback whale population decreases.  
   All recent years are times the humpback whale is overhunted.  
   Therefore, all recent years are times the humpback whale population decreases.  
   Valid

11. All places water exists are places human life can be sustained.  
   All places identical to the moon are places water exists.  
   Therefore, all places identical to the moon are places human life can be sustained.  
   Valid

12. All symphony orchestras with effective fund raisers are orchestras that survive.  
   All orchestras identical to the Cleveland symphony are orchestras that survive.  
   Therefore, all orchestras identical to the Cleveland symphony are orchestras with effective fund raisers.  
   Invalid, undistributed middle

13. No persons who think that everything is governed by deterministic laws are persons who believe in free will.  
   All mechanistic materialists are persons who think everything is governed by deterministic laws.  
   Therefore, no mechanistic materialists are persons who believe in free will.  
   Valid

14. All enforceable contracts to buy land are contracts in writing.  
   All contracts identical to our client's contract to buy land are contracts in writing.  
   Therefore, all contracts identical to our client's contract to buy land are enforceable contracts.  
   Invalid, undistributed middle

15. All telescopes unaffected by the atmosphere are orbiting telescopes.  
   All telescopes identical to the Hubble telescope are orbiting telescopes.  
   Therefore, all telescopes identical to the Hubble telescope are telescopes unaffected by the atmosphere.  
   Invalid

Part III

1. No organizations that make alcohol readily available and acceptable are organizations that are serious about fighting alcohol abuse.
All organizations identical to the Defense Department are organizations that make alcohol readily available and acceptable. Therefore, no organizations identical to the Defense Department are organizations that are serious about fighting alcohol abuse.

2. All times in which American cities are practically broke and millions of people are out of work are times in which aid to Israel should be stopped. All present times are times in which American cities are practically broke and millions of people are out of work. Therefore, all present times are times in which aid to Israel should be stopped.

3. All times a person decides life is impossible are times a person has a right to end his/her life. No times a person has a right to end his/her life are times suicide is immoral. Therefore, no times a person decides life is impossible are times suicide is immoral.

4. All efforts to ban books are efforts that ensure those books will be read. All efforts by the fundamentalist families in Church Hill, Tennessee to remove Macbeth, etc. from the libraries are efforts to ban books. Therefore, all efforts by the fundamentalist families in Church Hill, Tennessee, to remove Macbeth, etc. from the libraries are efforts that ensure those books will be read.

5. No times in which elected officials in Washington fail to act courageously and responsibly are times the budget deficit will be brought under control. All times in the foreseeable future are times elected officials in Washington fail to act courageously and responsibly. Therefore, no times in the foreseeable future are times the budget deficit will be brought under control.

6. All laws that are so vague that men of common intelligence must guess at their meaning are laws banned by the Constitution. All sexual harassment laws are laws so vague that men must guess at their meaning. Therefore, all sexual harassment laws are laws banned by the constitution.

7. All policies that promote more college graduates tomorrow are policies that result in higher tax revenues tomorrow. All policies that offer financial aid to college students today are policies that promote more college graduates tomorrow. Therefore, all policies that offer financial aid to college students today are policies that result in higher tax revenues tomorrow.

and
All policies that result in higher tax revenues tomorrow are good investments in the future.
All policies that offer financial aid to college students today are policies that result in higher tax revenues tomorrow.
Therefore, all policies that offer financial aid to college students today are good investments in the future.

8. All beings in which genes and environment control destinies are beings that fail to act freely.
All human beings are beings in which genes and environment control destinies.
Therefore, all human beings are beings that fail to act freely.

and

No beings that fail to act freely are beings that should be sent to prison for their transgressions.
All human beings are beings that fail to act freely.
Therefore, no human beings are beings that should be sent to prison for their transgressions.

9. All times toy-gun play is encouraged are occasions in which children are sent the message that the best way to deal with frustration and conflict is with a gun.
All occasions in which children are sent the message that best way to deal with frustration and conflict is with a gun are occasions in which children are sent the wrong message.
Therefore, all times toy-gun play is encouraged are occasions in which children are sent the wrong message.

10. All people who act in ways that decrease their chances of survival are people who will die out through natural selection.
All smokers who continue smoking are people who act in ways that decrease their chances of survival.
Therefore, all smokers who continue smoking are people who will die out through natural selection.

and

All people who act in ways that increase their chances of survival are people who will survive through natural selection.
All smokers who quit are people who act in ways that increase their chances of survival.
Therefore, all smokers who quit are people who will survive through natural selection.
Exercise 5.7
Part I

1. All A are B.
   No B are C.
   Some D are C.
   Some D are not A.

   Valid

2. All A are B.
   Some C are not B.
   No C are D.
   Some D are not A.

   Invalid

3. All E are F.
   All F are S.
   No S are M.
   Some E are S.
   No E are M.
   Some M are H.
   Some H are not E.

   Valid

4. No K are N.
   Some T are K.
   All T are C.
   Some C are Q.
   Some Q are not N.
   Some T are not N.
   Some C are not N.
   Some T are not N.
5. After obverting the first premise and contraposing the second premise, we have:

\[
\text{No C are B.} \\
\text{All A are B.} \\
\text{All D are A.} \\
\text{No D are C.}
\]

Valid

6. After obverting the first premise and contraposing the conclusion, we have,

\[
\text{All K are P.} \\
\text{No M are P.} \\
\text{Some M are S.} \\
\text{Some S are not K.}
\]

Valid

7. After contraposing the first premise and obverting the second premise and the conclusion, we have,

\[
\text{No X are W.} \\
\text{All U are W.} \\
\text{All V are U.} \\
\text{All V are Y.} \\
\text{No Y are X.}
\]

Invalid
8. After obverting the first premise and contraposing the second premise and the conclusion, we have,

\[
\begin{align*}
\text{All A are B.} & \quad \text{All A are C.} \\
\text{All B are C.} & \quad \text{No A are D.}
\end{align*}
\]

\[
\text{Some E are D.}
\]

Some E are not A.

Valid

9. After contraposing the first premise, obverting the third premise, converting and obverting the fourth premise, and obverting the fifth premise, we have,

\[
\begin{align*}
\text{All Q are P.} & \quad \text{No Q are L.} \\
\text{No P are L.} & \quad \text{No Q are K.} \\
\text{All K are L.} & \quad \text{Some M are not Q.}
\end{align*}
\]

Some K are M.

All M are N.

Some N are not Q.

Valid

10. After converting and obverting the second and fourth premises, and obverting the third and fifth premises and the conclusion, we have:

\[
\begin{align*}
\text{All P are Q.} & \quad \text{All P are R.} \\
\text{All Q are R.} & \quad \text{All P are S.}
\end{align*}
\]

All R are S.

No T are S.

All T are V.

No V are P.

Invalid
Part II.

1. All things that produce oxygen are things that support human life.
   All rainforests are things that produce oxygen.
   No things that support human life are things that should be destroyed.
   Therefore, no rainforests are things that should be destroyed.

   All O are S.
   All R are O.
   No S are D.
   No R are D.

   No S are D.  No O are D.
   All O are S.
   All R are O.
   No R are D.

2. No restrictive trade policies are policies that fail to invite retaliation.
   All policies that lead to a trade war are policies that threaten our standard of living.
   Some Japanese trade policies are restrictive trade policies.
   Therefore, all policies that invite retaliation are policies that lead to a trade war.

   No R are non-I.  (obvert)
   All L are T.
   Some J are R.
   All I are L.

   All L are T.
   All I are T.
   All R are I.
   Some J are R.
   Some J are T.

3. All things that poison drinking water are things that cause disease and death.
   All chemicals that percolate through the soil are things that contaminate aquifers.
   All dumped chemicals are chemicals that percolate through the soil.
   All things that contaminate aquifers are things that poison drinking water.
   Therefore, all dumped chemicals are things that cause disease and death.
All P are D.
All S are A.
All U are S.
All A are P.
All U are D.

All P are D.
All A are D.
All S are A.
All U are S.
All U are D.

4. No brittle things are ductile things.
All superconductors are ceramics.
All things that can be pulled into wires are ductile things.
All ceramics are brittle things.
Therefore, no superconductors are things that can be pulled into wires.

No B are D.
All S are C.
All P are D.
All C are B.
No S are P.

All P are D.
No B are D.
All C are B.
All S are C.
No S are P.

5. Some college students are persons who purchase their termpapers.
All cheats are persons expelled from college.
No persons who will achieve their career goals are persons expelled from college.
No persons who purchase their termpapers are non-cheats.
Therefore, some college students are persons who will not achieve their career goals.

Some S are P.
All C are E.
No A are E.
No P are non-C. (obvert)
Some S are non-A. (obvert)

No A are E.
All C are E.
All P are C.
No P are A.
Some $S$ are $P$.  
Some $S$ are not $A$.

6. No things identical to creation science are things that favor the teaching of evolution. 
   No things that frustrate the understanding of life are things that should be taught. 
   All things that oppose the teaching of evolution are things that impede the learning of biology. 
   All things that enhance the understanding of life are things that foster the learning of biology. 
   Therefore, no things identical to creation science are things that should be taught. 

   No $C$ are $T$. 
   No non-$U$ are $S$.  
   (convert, obvert) 
   All non-$T$ are non-$B$.  
   (contrapose) 
   All $U$ are $B$.  
   No $C$ are $S$. 

   All $S$ are $U$. 
   All $U$ are $B$. 
   All $B$ are $T$. 
   No $C$ are $T$. 
   No $C$ are $S$. 

7. All persons who give birth to crack babies are persons who increase future crime rates. 
   Some pregnant women are pregnant crack users. 
   All persons who increase future crime rates are criminals. 
   No pregnant crack users are persons who fail to give birth to crack babies. 
   Therefore, some pregnant women are criminals. 

   All $B$ are $I$. 
   Some $P$ are $U$. 
   All $I$ are $C$. 
   No $U$ are non-$B$.  
   (obvert) 
   Some $P$ are $C$. 

   All $I$ are $C$. 
   All $B$ are $I$. 
   All $U$ are $B$. 
   Some $P$ are $U$. 
   All $B$ are $C$. 
   All $U$ are $C$. 

8. All things that retard population growth are things that increase food availability.
All things that prevent starvation are things that enhance life.
No birth control measures are things that accelerate population growth.
All things that enhance life are things that should be encouraged.
All things that increase food availability are things that prevent starvation.
Therefore, no birth control measures are things that should be discouraged.

All non-I are non-R.
All P are E.
All B are R.
No E are D. (obvert)
All I are P.
No B are D.

No E are D.\{ No P are D.\{ No I are D.\{ No R are D.\}
All P are E.\} All I are P.\}
All I are P.\} All R are I.\} All B are R.\}
No B are D.\}

9. Some countries are countries that allow ivory trading.
All countries that resist elephant killing are countries that discourage poachers.
All countries that allow ivory trading are countries that encourage poachers.
No countries that promote the extinction of elephants are countries that should escape
the condemnation of the civilized world.
All countries that support elephant killing are countries that promote the extinction of
elephants.
Therefore, some countries are countries that should be condemned by the civilized
world.

Some C are I.
All non-K are non-E. (contrapose)
All I are E.
No P are non-S. (obvert)
All K are P.\}
Some C are S.\}

All P are S.\{ All K are S.\{ All E are K.\} All E are S.\{ All I are S.\}
All I are E.\}
Some C are I.  
Some C are S.

10. All things that promote skin cancer are things that cause death.  
   All things that preserve the ozone layer are things that prevent the release of CFCs.  
   No things that resist skin cancer are things that increase UV radiation.  
   All things that do not preserve the ozone layer are things that increase UV radiation.  
   Some packaging materials are things that release CFCs.  
   No things that cause death are things that should be legal.  
   Therefore, some packaging materials are things that should not be legal.

All S are C.  
All O are non-R.  (contrapose)  
No non-S are U.  (convert, obvert)  
All non-O are U.  
Some M are R.  
No C are L.  
Some M are non-L.  (obvert)

No C are L.  
All S are C.  
All U are S.  
All non-O are U.  
All R are non-O.  
Some M are R.  
Some M are not L.

Part III

1. No ducks are waltzers.  
   No officers are non-waltzers.  
   All poultry of mine are ducks.  
   Therefore, no poultry of mine are officers.

No D are W.  
No O are non-W.  (obvert)  
All P are D.  
No P are O.

All O are W.  
No D are O.  
All P are D.
No P are O.

2. No experienced persons are incompetent persons.
   All persons identical to Jenkins are persons who are always blundering.
   No competent persons are persons who are always blundering.
   Therefore, all persons identical to Jenkins are inexperienced persons.

   No E are non-C. (obvert)
   All J are B.
   No C are B.
   All J are non-E. (obvert)

   All E are C  No E are B.
   No C are B  All J are B.
   No J are E.

3. No terriers are things that wander among the signs of the zodiac.
   No things that do not wander among the signs of the zodiac are comets.
   All things that have a curly tail are terriers.
   Therefore, no comets are things that have a curly tail.

   No T are W.
   No non-W are O. (convert, obvert)
   All U are T.
   No O are U.

   All U are T  No U are W.
   No T are W  All O are W.
   No O are U.

4. All hummingbirds are richly-colored birds.
   No large birds are birds that live on honey.
   All birds that do not live on honey are birds that are dull in color.
   Therefore, all hummingbirds are small birds.

   All H are R.
   No L are O.
   All non-O are non-R. (contrapose)
   All H are non-L. (obvert)

   No L are O  No L are R
All R are O.
All H are R.
No H are L.

5. All non-ripe fruits are non-wholesome fruits.
   All apples identical to these are wholesome fruits.
   No fruits grown in the shade are ripe fruits.
   Therefore, all apples identical to these are apples not grown in the shade.

   All non-R are non-W. (contrapose)
   All A are W.
   No S are R.
   All A are non-S. (obvert)

   No S are R. \{ 
   All W are R \}
   No W are S.
   All A are W. \{ 
   No A are S. \}

6. All sons of mine are slim persons.
   No children of mine who do not exercise are healthy persons.
   All children of mine who are gluttons are fat persons.
   No daughters of mine are children of mine who exercise.
   Therefore, all children of mine who are gluttons are unhealthy persons.

   All S are L.
   No non-E are H. (convert, obvert)
   All G are non-L. (obvert)
   No non-S are E. (convert, obvert)
   All G are non-H. (obvert)

   All H are E. \{ 
   All E are S. \}
   All H are S. \{ 
   All H are L. \}
   No G are L.
   No G are H.

7. All books in this library that I do not recommend are books that are unhealthy in tone.
   All the bound books are well-written books.
   All the romances are books that are healthy in tone.
   All the unbound books are books in this library that I do not recommend.
Therefore, all the romances are well-written books.

All non-R are non-H.  (contrapose)
All B are W.
All O are H.
All non-B are non-R.  (contrapose)
All O are W.

\[
\begin{align*}
\text{All B are W,} & \quad \text{All R are W,} \\
\text{All H are R,} & \quad \text{All O are H}.
\end{align*}
\]

8. No interesting poems are unpopular poems among people of real taste.
   No modern poems are poems free from affection.
   All your poems are poems on the subject of soap bubbles.
   No affected poems are popular poems among people of real taste.
   No ancient poems are poems on the subject of soap bubbles.
   Therefore, all your poems are uninteresting poems.

\[
\begin{align*}
\text{No I are non-P.} & \quad \text{(obvert)} \\
\text{No M are non-A.} & \quad \text{(obvert)} \\
\text{All Y are S.} \\
\text{No A are P.} \\
\text{No non-M are S.} & \quad \text{(convert, obvert)} \\
\text{All Y are non-I.} & \quad \text{(obvert)}
\end{align*}
\]

9. All writers who understand human nature are clever persons.
   All true poets are persons who can stir the hearts of men.
   All persons identical to Shakespeare are persons who wrote Hamlet.
   No writers who do not understand human nature are persons who can stir the hearts of men.
   All persons who wrote Hamlet are true poets.
Therefore, all persons identical to Shakespeare are clever persons.

All U are C.
All T are M.
All S are H.
No non-U are M. (convert, obvert)
All H are T.
All S are C.

All U are C
All M are U
All T are M.
All H are T.
All S are H.
All S are C.

10. All animals that belong to me are animals I trust.
All dogs are animals that gnaw bones.
All animals I admit to my study are animals that beg when told to do so.
All the animals in the yard are animals that belong to me.
All animals I trust are animals I admit into my study.
All animals that are willing to beg when told to do so are dogs.
Therefore, all the animals in the yard are animals that gnaw bones.

All A are T.
All D are G.
All S are B.
All Y are A.
All T are S.
All B are D.
All Y are G.