Part A. For each of these sentences, (1) in the large blank, rewrite the sentence so that it is in categorical form; (2) put brackets "[ ]" around the subject term and the predicate term; (3) in the small blank, symbolize the sentence, using the indicated capital letters for the bracketed terms. Remember to use the operator "non-" or "(not ...)" for English negative terms.

0. Each person is an artist. \( \text{symbolic: all P are A} \)  
   rewrite: all [ persons ] are [ artists ]

1. All bananas are unsalted. \( \text{symbolic: all B are S} \)

2. Some brightly colored snakes are poisonous. \( \text{symbolic: some B are P} \)

3. Some contestants will be happy winners. \( \text{symbolic: some C will be H} \)

4. All ancient Greek philosophers were materialists. \( \text{symbolic: all A are M} \)

5. No animals were injured in the making of the film. \( \text{symbolic: no A were I} \)

6. Every automobile has an engine. \( \text{symbolic: every A has E} \)

7. Some students are ineligible for a loan. \( \text{symbolic: some S are E} \)

8. Some non-students are eligible for a loan. \( \text{symbolic: some S are E} \)

9. No non-students are ineligible for a loan. \( \text{symbolic: no S are I} \)

10. All trees are not inorganic. \( \text{symbolic: all T are O} \)

11. There are people that climb mountains. \( \text{symbolic: some P are C} \)

12. There are no people that can fly. \( \text{symbolic: no P can F} \)
Part B. With respect to the requirements for categorical form, find the errors in each of the sentences below. Use the error codes "Q", "S", "C", "P" to indicate when an error is made in the quantifier (Q), in the subject term (S), in the copula (C), or in the predicate term (P). Most, but not all of the sentences make one or more errors. Here, a stated component makes an error if it cannot be used in the correct final answer. If a sentence makes no error, then just write "none."

0. Many [cities] have [large skyscrapers]
   errors: Q  C  P

1. Each [persons who take logic] are [careful thinkers]
   errors:

2. Some [old books] in the library are [dusty books] that no one reads
   errors:

3. Some [students at Loyola] will get [their Ph.D. from Oxford]
   errors:

4. No [visitors to Chicago] are [not people impressed by the view of the lake]
   errors:

5. Some of the [cars at the exhibition] were [made out of plastic]
   errors:

6. Any [persons that can sing well] are [not persons likely to get rich]
   errors:

7. No [animals in the Lincoln Park Zoo] are unable [to be set free]
   errors:

8. No one [who are a naturalized citizens] can be [presidents of the U.S.]
   errors:

9. All [fish that are fish that are able to fish] are [fish that are fishing fish]
   errors:

10. [Students who take logic] are [students likely to get into law school]
    errors:

11. All [books that] are [expensive cost a lot of money]
    errors:

12. Somethings [in the attic] are [scary old skeletons]
    errors:
**Worksheet Exercise 3.3.A.**

**Categorical Translations**

**Part A.** For each of these sentences, (1) in the large blank, rewrite the sentence so that it is in categorical form; (2) put brackets "[ ]" around the subject term and the predicate term; (3) in the small blank, symbolize the sentence, using the indicated capital letters for the bracketed terms. Remember to use the operator "non-" or "(not ...)" for English negative terms. (These are a bit more difficult.)

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Symbolization</th>
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<tbody>
<tr>
<td>1. Ghosts roam these halls. (G, R)</td>
<td></td>
</tr>
<tr>
<td>2. A very old map is quite valuable. (M, V)</td>
<td></td>
</tr>
<tr>
<td>3. Some artistic works have no value. (A, V)</td>
<td></td>
</tr>
<tr>
<td>4. Guys like to explore rugged places. (G, E)</td>
<td></td>
</tr>
<tr>
<td>5. Some things that have wings cannot fly. (W, F)</td>
<td></td>
</tr>
<tr>
<td>6. Some animals that have wings are birds that cannot fly. (A,B)</td>
<td></td>
</tr>
<tr>
<td>7. Non-college students visited the campus yesterday. (C,V)</td>
<td></td>
</tr>
<tr>
<td>8. A person who is angry is not rational. (P, R)</td>
<td></td>
</tr>
<tr>
<td>9. Non-philosophers always have a good time. (P, G)</td>
<td></td>
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<tr>
<td>10. Nothing round is square. (R, S)</td>
<td></td>
</tr>
<tr>
<td>11. Only tigers have stripes. (T, S)</td>
<td></td>
</tr>
<tr>
<td>12. Not any person knows the secret password. (P, K)</td>
<td></td>
</tr>
</tbody>
</table>
**Worksheet Exercise 3.3.B.**

Categorical Translations

**Part B.** For each of these sentences, (1) in the large blank, rewrite the sentence so that it is in categorical form; (2) put brackets "[ ]" around the subject term and the predicate term; (3) in the small blank, symbolize the sentence, using the indicated capital letters for the bracketed terms. (These are a bit more difficult.)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Whosoever loves gold, loves death. (G, D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.*</td>
<td>Whatever you do, you cannot stop time. (A, S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Insects exist everywhere. (P, I)</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>There are people who think they are divine. (P, T)</td>
<td></td>
<td></td>
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<tr>
<td>5.*</td>
<td>Bureaucrats never work. (B, W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Sometimes people are nasty. (P, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.*</td>
<td>People are sometimes nasty. (P, N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Forgeries were found in the Art Institute. (F, A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Not anyone showed up. (P, S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>A picture is worth a thousand words. (P, W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Forgeries are fake works intended for deception. (F, W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>A statue of a sitting mermaid stands by the harbor. (M, S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>A statue of a sitting mermaid is delightful. (M, D)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

>>> continued on back side >>>
Answers to the starred problems of Part B.

2. All [actions] are [not able to stop time]. All A are (not S)
5. No [bureaucrats] are [workers]. No B are W
7. All [persons] are [sometimes nasty]. All P are N
14. Some [things that do not breathe] are [oxygen needers]. Some non-B are O
17. All [havers of executive pension plans] are [senior executives]. All P are S
20. All [times when the lights go out] are [times things get quiet]. All T are Q
21. Not all snakes are poisonous. ~(all S are P)
24. No [physical things] are [un-detectable]. No P are non-D
**Worksheet Exercise 3.4.A.**

**Venn Diagrams for Sentences**

**Part A.** Symbolize the sentences in the blanks provided. Also, draw the Venn diagrams for the sentences. Remember that circles represent affirmative terms only.

01. All persons are artists. (P, A)

02. All bananas are unsalted. (B, S)

03. Some snakes are poisonous. (S, P)

04. Some contestants are not winners. (C, W)

05. No philosophers are materialists. (P, M)

06. All animals are not writers. (A, W)

07. Some non-cars are wheeled things. (C, W)

08. All trees are not inorganic. (T, O)

09. Some students are ineligible. (S, E)

10. Some non-students are eligible. (S, E)

11. Some non-students are ineligible. (S, E)

12. No non-students are ineligible. (S, E)
Part B. For each of the following sentence pairs, give a Venn diagram for the first sentence of the pair, and then use the negation correlation method to draw the Venn diagram for the second sentence. (Some of the left-side diagrams are difficult.) Finish with a reflection on what the (b)-diagrams in each case should intuitively look like.

1. (a) some G are H  
   (b) not (some G are H)

2. (a) all S are B  
   (b) not (all S are B)

3. (a) some U are non-R  
   (b) not (some U are non-R)

4. (a) all J are non-B  
   (b) not (all J are non-B)

5. (a) some non-A are W  
   (b) not (some non-A are W)

6. (a) no Q are K  
   (b) not (no Q are K)

7. (a) some non-W are non-P  
   (b) not (some non-W are non-P)

8. (a) all non-M are A  
   (b) not (all non-M are A)

9. (a) no E are non-D  
   (b) not (no E are non-D)

10. (a) all non-K are non-L  
    (b) not (all non-K are non-L)

11. (a) no non-T are S  
    (b) not (no non-T are S)

12. (a) no non-U are non-E  
    (b) not (no non-U are non-E)
Part A. Symbolize the arguments in the blanks provided. Draw the premisses in the premiss diagram and the conclusion in the conclusion diagram, and say whether the diagrams show the syllogism to be valid (YES/NO). Label the circles with obvious letters in the order of their occurrence in the syllogism: first letter in the syllogism = top circle, second = on left, third = on right.

1.
All poets are artists.
All artists are inspired. 
So, all poets are inspired. 

2.
Some doctors are lawyers. 
No vets are lawyers. So, some doctors are not vets. 

3.
No apples are bananas. No bananas are oranges. So, no apples are oranges. 

4.
No cars are planes. Some wagons are cars. So, some wagons are not planes. 

5.
Some paintings are costly items. Some costly items are famous. So, some paintings are famous. 

6.
All golfers are athletes. All babies are not athletes. So, all babies are not golfers. 

7.
Some thinkers are not kings. 
No kings are scholars. So, some thinkers are scholars. 

8.
Some writers are not artists. 
No non-artists are poets. So, some writers are not poets. 

[Hint #8: First figure out the two-circle diagram for the second premiss.]
Part B: Use Venn diagrams to determine whether the following sentence pairs are equivalent. Symbolize the sentences. Draw a separate diagram for each sentence. Label the circles with the obvious letters. Remember that each circle represents an affirmative term only. Some of these diagrams will make use of the "outer region", so be sure to draw the rectangular outer border in those cases. Finally, say whether the diagrams show the sentences to be equivalent (YES/NO).

Worksheet Exercise 3.5.B.
Venn Diagrams for Equivalences
Name ____________________________
Class __________________________ Date __________

1 (a) No kangaroos are monkeys
    symb: __________________________

1 (b) no monkeys are kangaroos
    symb: __________________________

sentences equivalent? ______

2 (a) Some giraffes are not dragons
    ______

2 (b) some dragons are not giraffes
    ______

sentences equivalent? ______

3 (a) All fish are swimmers
    ______

3 (b) all swimmers are fish
    ______

sentences equivalent? ______

4 (a) All wizards are non-roosters
    ______

4 (b) all roosters are non-wizards
    ______

sentences equivalent? ______

5 (a) some non-bananas are peaches
    ______

5 (b) some peaches are non-bananas
    ______

sentences equivalent? ______

>> continued on back side >>
6 (a) All hats are gigantic  
(b) no hats are non-gigantic  

7 (a) Some ants are monsters  
(b) some non-monsters are non-ants  

8 (a) All non-spirits are bulky  
(b) no non-spirits are non-bulky  

9 (a) All planets are spheres  
(b) all non-planets are non-spheres  

10(a) Some non-ants are non-bugs  
(b) some bugs are not non-ants  

Ex. 3. 5. B.  
Name ____________________ / _______
**Part A.** Symbolize each of the following inferences, but do not change the original arguments. If an inference is valid, give the name of the equivalence used; otherwise, just say it is invalid.

| 0. Some vegetables are tomatoes .: Some tomatoes are vegetables | some V are T some T are V | Conv. |
| 1. All apples are fruits .: All fruits are apples | all A are F all F are A | Invalid |
| 2. Some bananas are vegetables .: Some non-bananas are non-vegetables | | |
| 3. No peaches are blueberries .: All peaches are non-blueberries | | |
| 4. All oranges are fruits .: All non-fruits are non-oranges | | |
| 5. Not some bananas are green .: All bananas are non-green | | |
| 6. All peaches are non-blue .: Not some peaches are blue | | |
| 7. Not no watermelons are fruits .: All watermelons are fruits | | |
| 8. No tomatoes are fruits .: All non-tomatoes are fruits | | |
| 9. Some pears are not non-apples .: Some pears are apples | | |
| 10. Some non-tomatoes are non-fruits .: Some tomatoes are not non-fruits | | |
| 11. All apples are not tomatoes .: All non-tomatoes are not non-apples | | |
| 12. Some oranges are non-vegetables .: Some non-vegetables are oranges | | |
| 13. All strawberries are fruits .: All non-strawberries are non-fruits | | |
| 14. All peaches are non-apples .: All apples are non-peaches | | |
| 15. No mangos are non-fruits .: All non-mangos are non-fruits | | |
| 16. Not all cherries are apples .: Some cherries are non-apples | | |
| 17. Some apples are non-vegetables .: Some vegetables are non-apples | | |
| 18. Some non-apples are vegetables .: Some vegetables are non-apples | | |
| 19. No non-oranges are non-vegetables .: No vegetables are oranges | | |
| 20. All non-blueberries are non-fruits .: All fruits are blueberries | | |
$S$, $P$, $M$ are variables that represent both affirmative terms and negative terms.

Elementary Equivalences For Traditional Logic

**Predicate Double Negation (Pred-DN)**

\[
\ldots \ldots \text{are } P \quad = \quad \ldots \ldots \text{are non-non-}P
\]

Here the dotted notation represents any quantifier and any subject term, both of which must be kept constant in the inference.

**The Quantifier-Negation laws (QN)**

- not (all $S$ are $P$) $\equiv$ some $S$ are non-$P$
- not (some $S$ are $P$) $\equiv$ all $S$ are non-$P$
- no $S$ are $P$ $\equiv$ all $S$ are non-$P$
- no $S$ are $P$ $\equiv$ not (some $S$ are $P$)

**Conversion (Conv)**

- some $S$ are $P$ $\equiv$ some $P$ are $S$
- no $S$ are $P$ $\equiv$ no $P$ are $S$

**Contraposition (Contrap)**

- all $S$ are $P$ $\equiv$ all opposite[$P$] are opposite[$S$]

Elementary Argument Forms For Traditional Logic

**Univ Syll**

- all $S$ are $M$
- all $M$ are $P$

$\therefore$ all $S$ are $P$

**Part Syll**

- some $S$ are $M$
- all $M$ are $P$

$\therefore$ some $S$ are $P$

One may also supersize these rules by adding the appropriate continuation premisses.

Additional rules for Traditional Logic

**Sing Univ Syll**

- all $S$ are $M$
- $n$ is $S$

$\therefore$ $n$ is $P$

**Sing Part Syll**

- some $S$ are $M$
- $n$ is $P$

$\therefore$ some $S$ are $P$

**Name-Negation Law**

$\sim (n$ is $P) \equiv n$ is non-$P$
Part A. Here are some additional examples of deductions for syllogistic arguments. For some of these arguments a solution has been provided so that you can compare your own answer to it. Do not be alarmed if your answer is different — there are several ways to do these problems.

(1) There are very mellow persons. Everyone is endowed with free will. All who are endowed with free will are potentially very dangerous. So, some very mellow persons are potentially very dangerous.

1. some P are M  Prem 1. some P are M  Prem
2. all P are E  Prem 2. all P are E  Prem
3. all E are D  Prem 3. all E are D  Prem
\[ \therefore \text{ some M are D} \]

1. no I are S  Prem 1. no I are S  Prem
2. all non-I are E  Prem 2. all non-I are E  Prem
\[ \therefore \text{ all S are E} \]

1. no H are D  Prem 1. no H are D  Prem
2. all non-D are non-C  Prem 2. all non-D are non-C  Prem
\[ \therefore \text{ no C are H} \]

Worksheet Exercise 3.7.A.

Practice with Deductions

Name ________________________________ Date ____________

Part A. Here are some additional examples of deductions for syllogistic arguments. For some of these arguments a solution has been provided so that you can compare your own answer to it. Do not be alarmed if your answer is different — there are several ways to do these problems.

(1) There are very mellow persons. Everyone is endowed with free will. All who are endowed with free will are potentially very dangerous. So, some very mellow persons are potentially very dangerous.

1. some P are M  Prem 1. some P are M  Prem
2. all P are E  Prem 2. all P are E  Prem
3. all E are D  Prem 3. all E are D  Prem
\[ \therefore \text{ some M are D} \]

1. no I are S  Prem 1. no I are S  Prem
2. all non-I are E  Prem 2. all non-I are E  Prem
\[ \therefore \text{ all S are E} \]

1. no H are D  Prem 1. no H are D  Prem
2. all non-D are non-C  Prem 2. all non-D are non-C  Prem
\[ \therefore \text{ no C are H} \]

Worksheet Exercise 3.7.A.

Practice with Deductions

Name ________________________________ Date ____________
(4) Not everyone can dance. Whoever cannot dance didn’t take lessons at the Arthur Murray School of Dance. Only those who take lessons at the Arthur Murray School of Dance pay money to that school. So, not everyone pays money to the Arthur Murray School of Dance.

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<tbody>
<tr>
<td>1. not all P are D</td>
<td>Prem</td>
<td>1. not all P are D</td>
<td>Prem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. all non-D are non-T</td>
<td>Prem</td>
<td>2. all non-D are non-T</td>
<td>Prem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. all M are T</td>
<td>Prem</td>
<td>3. all M are T</td>
<td>Prem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>∴ not all P are M</td>
<td></td>
<td>∴ not all P are M</td>
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4. _____________________
5. _____________________
6. _____________________
7. _____________________
8. _____________________
9. _____________________
10. _____________________

(5)

1. some A are B
2. no B are non-C

---

3. _____________________
4. _____________________
5. _____________________
6. _____________________
7. _____________________

(6)

1. not all A are B
2. all A are C

---

3. _____________________
4. _____________________
5. _____________________
6. _____________________
7. _____________________

(7)

1. all K are non-S
2. all M are S
3. all non-B are K

---

4. _____________________
5. _____________________
6. _____________________
7. _____________________
8. _____________________
**Part B.** Give deductions for the following arguments by supplying steps and reasons. Use as many blanks as you need.

(1) All babies are illogical. No one who can manage a crocodile is despised. Illogical persons are despised. So, babies cannot manage crocodiles.

   1. all B are I
   2. no M are D
   3. all I are D /
   ∴ all B are non-M

(2) None of my books are interesting. Every one of your writings is interesting. Only your writings are criticized by you. So, you are critical about none of my books.

   1. no B are I
   2. all W are I
   3. all non-W are non-C /
   ∴ no B are C

(3) No subscribers to the New York Times are not well-educated. No kangaroos can read. Whoever can not read is not well-educated. So, kangaroos do not subscribe to the New York Times.

   1. no S are non-W
   2. no K are R
   3. all non-R are non-W /
   ∴ all K are non-S

   >> Continued on back side >>
No one who cannot stir the hearts of men is a true poet. No one who does not truly understand human nature can stir the hearts of men. Only exceptional people truly understand human nature. Exceptional people are capable of wielding great power. Those who are capable of wielding great power are potentially very dangerous. So, true poets are potentially very dangerous.

[Hint: Try to use the Supersized version of the rule Univ Syll.]
(5) People who are sane can do logic. No lunatics are allowed to be on a jury. No one in your family can do logic. So, no one in your family is allowed to be on a jury.

1. all S are L
2. no non-S are A
3. no F are L /:. no F are A
--------
4. ______________________     __________
5. ______________________     __________
6. ______________________     __________
7. ______________________     __________
8. ______________________     __________
9. ______________________     __________
10. ______________________     __________
11. ______________________     __________

(6) All lions are cats.
All cats are felines.
No reptiles are felines.
All snakes are reptiles.
All boas are snakes.
Some pets are boas.
All pets are cared for animals.
So, not all cared for animals are lions.

1. All L are C
2. All C are F
3. No R are F
4. All S are R
5. All B are S
6. Some P are B
7. All P are A /:. not all A are L
--------
8. ______________________     __________
9. ______________________     __________
10. ______________________     __________
11. ______________________     __________
12. ______________________     __________
13. ______________________     __________
14. ______________________     __________
15. ______________________     __________
16. ______________________     __________
17. ______________________     __________
18. ______________________     __________
19. ______________________     __________
20. ______________________     __________

[Hint: Divide the problem into two parts. First part, use Super Part Syll to derive the step "some pets are non-lions". Second part, with the help of the last premiss finish the deduction.]
Monkeys are bold. Nothing bold is scared of a baby. Some monkeys are unimaginative. Whatever is scared of a gigantic baby with a machine gun is scared of a baby. So, not everything that is not scared of a gigantic baby with a machine gun is imaginative.

1. all M are B
2. no B are S
3. some M are non-I
4. all G are S \(\therefore\) not all non-G are I

----------
5. ______________________     __________
6. ______________________     __________
7. ______________________     __________
8. ______________________     __________
9. ______________________     __________
10.______________________     __________
11.______________________     __________
12.______________________     __________
13.______________________     __________
14.______________________     __________


To succeed in life, one must be able to achieve everything that is really important to one's life. No one can achieve everything that is really important to one's life if one does not know one's shortcomings. Knowing one's shortcomings means being able to admit that one makes mistakes. But, some people just can't admit that they make mistakes. So, some people will not succeed in life.

1. all S are A
2. no non-K are A
3. all K are M
4. some P are non-M \(\therefore\) some P are non-S

----------
5. ______________________     __________
6. ______________________     __________
7. ______________________     __________
8. ______________________     __________
9. ______________________     __________
10.______________________     __________
11.______________________     __________
12.______________________     __________
13.______________________     __________
14.______________________     __________
Part C. Give deductions for the following arguments, use as many steps as you need.

(1) 1. no K are non-M  
2. some A are G  
3. no non-S are G  
4. all S are K  \(\therefore\) some A are M  
-----

5. ___________________  
6. ___________________  
7. ___________________  
8. ___________________  
9. ___________________  
10. ___________________  
11. ___________________  
12. ___________________

(2) 1. not all Q are B  
2. all W are K  
3. all K are B  
4. not some non-W are U  \(\therefore\) some Q are non-U  
-----

5. ___________________  
6. ___________________  
7. ___________________  
8. ___________________  
9. ___________________  
10. ___________________  
11. ___________________  
12. ___________________

(3) 1. b is non-M  
2. all S are M  
3. all R are E  
4. no E are non-S  \(\therefore\) not all non-M are R  
-----

5. ___________________  
6. ___________________  
7. ___________________  
8. ___________________  
9. ___________________  
10. ___________________  
11. ___________________  
12. ___________________  
13. ___________________  
14. ___________________
(4)  1. all D are non-Q
2. all D are S
3. \( \xi \) is D
4. all non-Q are M
5. no S are non-A /: not no A are M

(5)  1. no A are B
2. all C are B
3. no U are M
4. all non-A are M
5. no non-U are K /: no C are K

(6)  1. d is K
2. not some P are Q
3. all B are Q
4. no K are non-B
5. all non-M are P /: some K is M
Part A. Symbolize the following arguments, using the combined symbolic languages of Propositional Logic and Traditional Logic.

(#1) 1. If everyone likes to sing or dance, then everyone likes to be active. 2. If everyone likes to be active, then it is false that someone is completely lethargic. So, if everyone likes to sing or dance, then no one is completely lethargic.

1. ____________________________________________________________________
2. ____________________________________________________________________
So, ____________________________________________________________________

(#2) 1. Some people invent important new theories. 2. All who invent important new theories are famous. 3. If some people are famous, then not all people are undistinguished. So, some people are distinguished.

1. ____________________________________________________________________
2. ____________________________________________________________________
3. ____________________________________________________________________
So, ____________________________________________________________________

(#3) 1. If all even numbers are non-quintuple reals, then all multiples of four are non-quintuple reals. 2. Some multiples of four are also multiples of five (e.g, the number twenty). 3. But, no non-quintuple reals are multiples of five. So, some even numbers are not non-quintuple reals.

1. ____________________________________________________________________
2. ____________________________________________________________________
So, ____________________________________________________________________

(#4) 1. All actions performed out of physical necessity are not morally characterized actions. 2. Some things that people do are actions performed through brainwashing. 3. All actions performed through brainwashing are actions performed out of physical necessity. So, not all things that people do are morally characterized actions.

1. ____________________________________________________________________
2. ____________________________________________________________________
3. ____________________________________________________________________
So, ____________________________________________________________________

>> continued on back side >>
(#5) 1. Either some physical things are atoms, or it is not the case that some physical things are atoms. 2. If some physical things are atoms, then all material things are made of atoms. 3. If it is not the case that some physical things are atoms, then no material things are made of atoms. So, all material things are made of atoms, or no material things are made of atoms, and consequently, if some material things are made of atoms, then all material things are made of atoms.

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
So, ____________________________________________________________
So, ____________________________________________________________

(#6) 1. All beings that are perfect cannot be lacking in some feature that would make them greater if they had it than if they did not have it. 2. All beings that are not omnipotent are clearly lacking in some feature that would make them greater if they had it than if they did not have it, as are beings that are not omniscient, as are as beings that are not omnibenevolent, and as are beings that are not eternal. So, all perfect beings must be omnipotent; they must be omniscient; they must be omnibenevolent; and they must be eternal. [Hint: L = beings that lack some feature that would make them greater if they had it than if they did not have it.]

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
So, ____________________________________________________________

(#7) 1. Either some persons have free will, or no persons have free will. 2. If some persons have free will, then some actions are good and some actions are evil. 3. If no persons have free will, then no actions are good and no actions are evil. So, either some actions are evil, or no actions are good.

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
So, ____________________________________________________________

(#8) 1. Actions that are good are morally characterized actions, and they and only they deserve to be rewarded. 2. Also, actions that are evil are morally characterized actions, and they and only they deserve to be punished. So, actions that are not morally characterized actions do not deserve to be rewarded, nor do they deserve to be punished.

1. ____________________________________________________________
2. ____________________________________________________________
So, ____________________________________________________________
Part B. Give deductions for the following arguments.

1. 1. (all P are L) ⊃ (all P are A)
   2. (all P are A) ⊃ ~(some P are C)
       ∴ (all P are L) ⊃ (no P are C)

2. 1. some P are I
   2. all I are F
   3. (some P are F) ⊃ ~(all P are non-D)
       ∴ some P are D

3. 1. (all E are non-Q) ⊃ (all M are non-Q)
   2. some M are F
   3. no non-Q are F
       ∴ some E are non-non-Q

4. 1. all N are non-M
   2. some D are B
   3. all B are N
       ∴ ~(all D are M)

>> continued on back side >>
5. 1. (some P are A) V ~\((\text{some P are A})\) 
2. (some P are A) \(\supset\) (all E are M) 
3. ~\((\text{some P are A})\) \(\supset\) (no E are M) 
   \[ : \text{(all E are M)} \lor (\text{no E are M}) \] 
   \[ \therefore (\text{some E are M)} \lor (\text{all E are M}) \]

6. 1. all P are non-L 
2. (all non-O are L) \& (all non-S are L) \& (all non-B are L) \& (all non-E are L) 
\[ \therefore (\text{all P are O)} \lor (\text{all P are S)} \lor (\text{all P are B)} \lor (\text{all P are E}) \]

7. 1. (some P are F) \lor (\text{no P are F)} 
2. (some P are F) \(\supset\) \[ (\text{some A are G)} \lor (\text{some A are E}) \] 
3. (no P are F) \(\supset\) \[ (\text{no A are G)} \lor (\text{no A are E}) \] 
\[ \therefore (\text{some A are E)} \lor (\text{no A are G}) \]

8. 1. (all G are M) \& (all G are R) \& (all R are G) 
2. (all E are M) \& (all E are P) \& (all P are E) 
\[ \therefore (\text{all non-M are non-R)} \lor (\text{all non-M are non-P}) \]