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. (P, A)   symbolic: all P are A _____

    rewrite: all [persons] are [artists] _____

1. All bananas are unsalted. (B, S)   _____

    _____

2. Some brightly colored snakes are poisonous. (B, P)   _____

    _____

3. Some contestants will be happy winners. (C, H)   _____

    _____

4. All ancient Greek philosophers were materialists. (A, M)   _____

    _____

5. No animals were injured in the making of the film. (A, I)   _____

    _____

6. Every automobile has an engine. (A, E)   _____

    _____

7. Some students are ineligible for a loan. (S, E)   _____

    _____

8. Some non-students are eligible for a loan. (S, E)   _____

    _____

9. No non-students are ineligible for a loan. (S, E)   _____

    _____

10. All trees are not inorganic. (T, O)   _____

    _____

11. There are people that climb mountains. (P, C)   _____

    _____

12. There are no people that can fly. (P, F)   _____

    _____

Part B. With respect to the requirements for categorical form, find the <u>errors</u> 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 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 [scarry old skeletons]

    errors: _____

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.)

1. Ghosts roam these halls. (G, R)   _____

   _____

2. A very old map is quite valuable. (M, V)   _____

   _____

3. Some artistic works have no value. (A, V)   _____

   _____

4. Guys like to explore rugged places. (G, E)   _____

   _____

5. Some things that have wings cannot fly. (W, F)   _____

   _____

6. Some animals that have wings are birds that cannot fly. (A,B)   _____

   _____

7. Non-college students visited the campus yesterday. (C,V) _____

   _____

8. A person who is angry is not rational. (P, R)   _____

   _____

9. Non-philosophers always have a good time. (P, G)   _____

   _____

10. Nothing round is square. (R, S)   _____

    _____

11. Only tigers have stripes. (T, S)   _____

    _____

12. Not any person knows the secret password. (P, K)   _____

    _____

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.)

1. Whosoever loves gold, loves death. (G, D)   _____

    _____

2.* Whatever you do, you cannot stop time. (A, S)   _____

    _____

3. Insects exist everywhere. (P, I)   _____

    _____

4. There are people who think they are divine. (P, T)   _____

    _____

5.* Bureaucrats never work. (B, W)   _____

    _____

6. Sometimes people are nasty. (P, N)   _____

    _____

7.* People are sometimes nasty. (P, N)   _____

    _____

8. Forgeries were found in the Art Institute. (F, A)   _____

    _____

9. Not anyone showed up. (P, S)   _____

    _____

10. A picture is worth a thousand words. (P, W)   _____

    _____

11. Forgeries are fake works intended for deception. (F,W) _____

    _____

12. A statue of a sitting mermaid stands by the harbor. (M,S) _____

    _____

13. A statue of a sitting mermaid is delightful. (M, D) _____

14.* There are things that do not breathe that need oxygen. (B,O) _____

_____

15. A group of people barged into the office. (P, B)   _____

_____

16. No rare books are without value. (R, V)   _____

_____

17.* Only senior executives have executive pension plans. (S,P)   _____

_____

18. Only professionals are ineligible. (P, E)   _____

_____

19. Only non-professionals are eligible. (P, E)   _____

_____

20.* Whenever the lights go out, things get real quiet. (T,Q)   _____

_____

21.* Well of course, <u>all</u> snakes are not poisonous. (S, P)   _____

_____

22. There are no good deeds that go unpunished. (G,P)   _____

_____

23. Cars that do not use gasoline exist. (C, U)   _____

_____

24.* Undetectable physical things do not exist. (P, D)   _____

_____

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 <u>not</u> 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 [<u>un</u>-detectable].	No P are non-D

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)
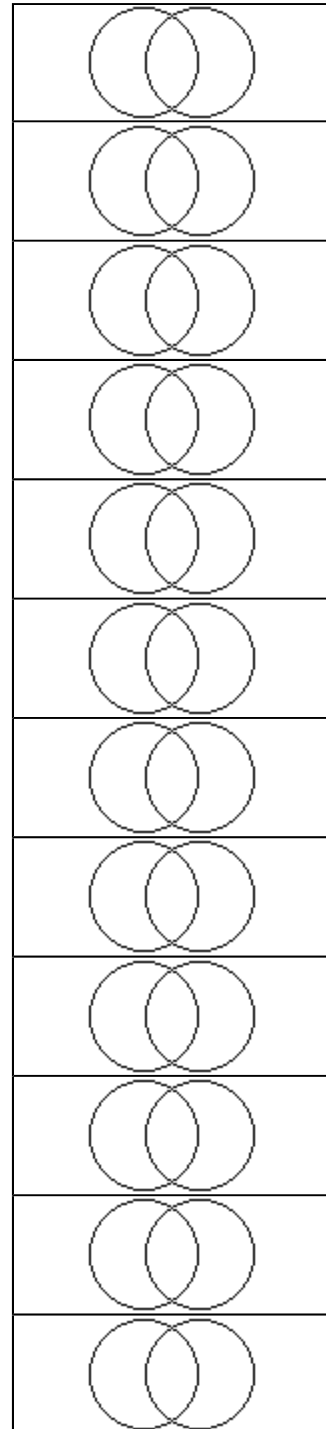
   _____

Part B. For each of the following sentence pairs, give a Venn diagram for the first sentence of the pair, and then use the <u>negation correlation method</u> 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 premisses 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 <u>order</u> of their occurrence in the syllogism: first letter in the syllogism = top circle, second = on left, third = on right.
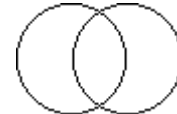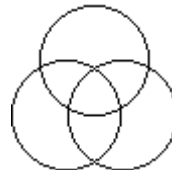
1.

All poets are artists.   _____
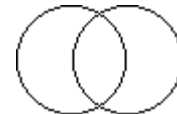All artists are inspired.   _____
So, all poets are inspired.   _____
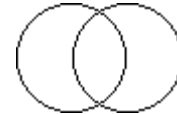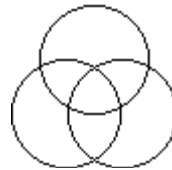
Valid?

_____

2.

Some doctors are lawyers.   _____
No vets are lawyers. So,   _____
some doctors are not vets.   _____
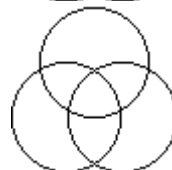
Valid?

_____

3.

No apples are bananas. No   _____
bananas are oranges. So,   _____
no apples are oranges.   _____
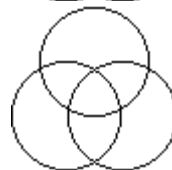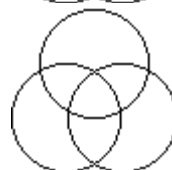
Valid?

_____

4.

No cars are planes. Some   _____
wagons are cars. So, some   _____
wagons are not planes.   _____
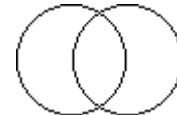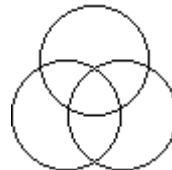
Valid?

_____

5.

Some paintings are costly   _____
items. Some costly items are   _____
famous. So, some paintings   _____
are famous.
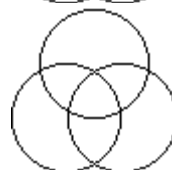
Valid?

_____

6.

All golfers are athletes. All   _____
babies are not athletes. So,   _____
all babies are not golfers.   _____
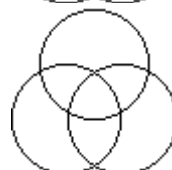
Valid?

_____

7.

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

Valid?

_____

8.

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

Valid?

_____

[Hint #8: <u>First</u> 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 underline 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).

1 (a) No kangaroos are monkeys   (b) no monkeys are kangaroos
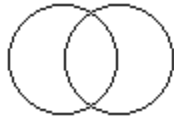
symb: _____   symb: _____

sentences equivalent?

_____

2 (a) Some giraffes are not dragons   (b) some dragons are not giraffes

_____   _____

sentences equivalent?

_____

3 (a) All fish are swimmers   (b) all swimmers are fish

_____   _____

sentences equivalent?

_____

4 (a) All wizards are non-roosters   (b) all roosters are non-wizards

_____   _____

sentences equivalent?

_____

5 (a) some non-bananas are peaches   (b) some peaches are non-bananas

_____   _____

sentences equivalent?

_____
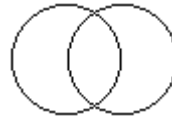
6 (a) All hats are gigantic   (b) no hats are non-gigantic

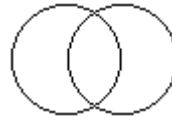_____   _____   sentences
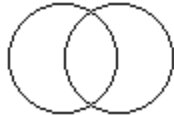   equivalent?

                                                                          _____

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

_____   _____   sentences
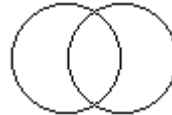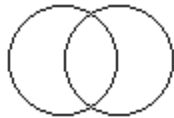   equivalent?

                                                                          _____

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

_____   _____   sentences
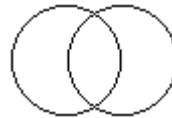   equivalent?

                                                                          _____

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

_____   _____   sentences
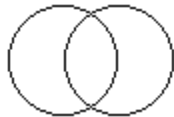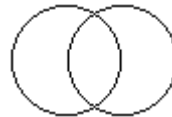   equivalent?

                                                                          _____

10(a) Some non-ants are non-bugs   (b) some bugs are not non-ants
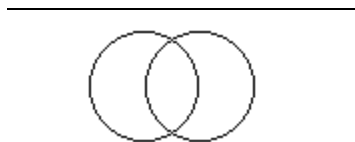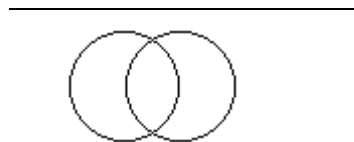
_____   _____   sentences
                                                                          equivalent?

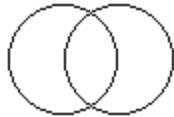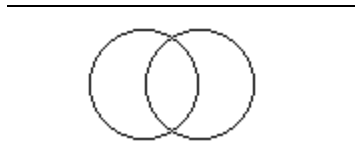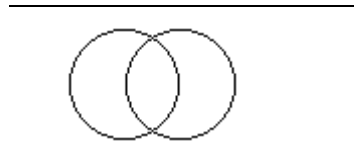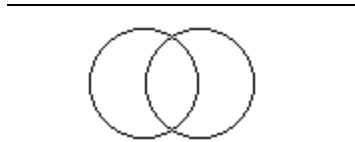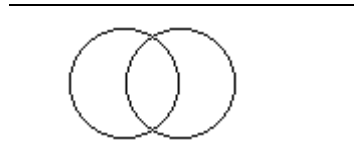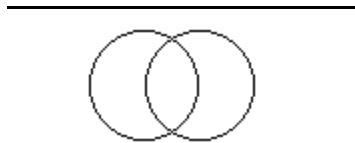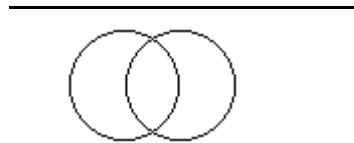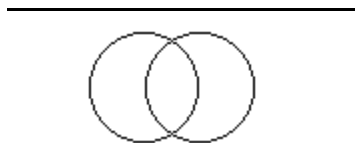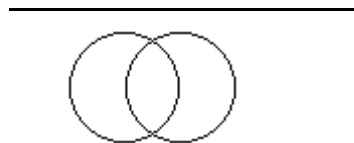   _____

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 watermellons are fruits ∴ All watermellons 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		

Reference Sheet 3.7.
Rules of Traditional Logic

S, **P**, **M** are variables that represent both <u>affirmative</u> terms and <u>negative</u> terms.

Elementary Equivalences For Traditional Logic

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

... ... are **P**   = ... 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**)	=	some **S** are non-**P**
not (some **S** are **P**)	=	all **S** are non-**P**
no **S** are **P**	=	all **S** are non-**P**
no **S** are **P**	=	not (some **S** are **P**)

Conversion (**Conv**)

some **S** are **P**	=	some **P** are **S**
no **S** are **P**	=	no **P** are **S**

Contraposition (**Contrap**)

all **S** are **P**	=	all **opposite**[P] are **opposite**[S]

Elementary Argument Forms For Traditional Logic

Univ Syll

all **S** are **M**
all **M** are **P**
∴ all **S** are **P**

Part Syll

some **S** are **M**
all **M** are **P**
∴ 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**
∴ **n** is **P**

Sing Part Syll

n is **S**
n is **P**
∴ some **S** are **P**

Name-Negation Law

~(**n** is **P**) = **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
∴ some M are D		∴ some M are D	
----------		----------	
4. _____ _____		4. some M are P	1, Conv
5. _____ _____		5. some M are E	4,2, Part Syll
6. _____ _____		6. some M are D	5,3, Part Syll
7. _____ _____			
8. _____ _____			

(2) No introverts are socialites. All who are not introverts are extroverts. So, all socialites are extroverts.

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
∴ all S are E		∴ all S are E	
----------		----------	
3. _____ _____		3. all I are non-S	1, QN
4. _____ _____		4. all S are non-I	3, Contrap
5. _____ _____		5. all S are E	4,2, Univ Syll
6. _____ _____			
7. _____ _____			

(3) No one who is a happy is depressed. All who are not depressed are not people whose candidate is losing. So, no one who has a candidate that is losing is a happy person.

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
∴ no C are H		∴ no C are H	
----------		----------	
3. _____ _____		3. all H are non-D	1, QN
4. _____ _____		4. all H are non-C	3,2, Univ Syll
5. _____ _____		5. all C are non-H	4, contrap
6. _____ _____		6. no C are H	5, QN
7. _____ _____			
8. _____ _____			

(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.

1. not all P are D	Prem	1. not all P are D	Prem
2. all non-D are non-T	Prem	2. all non-D are non-T	Prem
3. all M are T	Prem	3. all M are T	Prem
∴ not all P are M		∴ not all P are M	
----------		----------	
4. _____ _____		4. some P are non-D	1, QN
5. _____ _____		5. some P are non-T	4,2, Part Syll
6. _____ _____		6. all non-T are non-M	3, Contrap
7. _____ _____		7. some P are non-M	5,6, Part Syll
8. _____ _____		8. not all P are M	7, QN
9. _____ _____			
10._____ _____			

(5)
1. some A are B   Prem
2. no B are non-C   Prem   /∴ some A are C
----
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. _____ _____

(6)
1. not all A are B   Prem
2. all A are C   Prem   /∴ some non-B are C
----
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. _____ _____

(7)
1. all K are non-S   Prem
2. all M are S   Prem
3. all non-B are K   Prem   /∴ all M are B
----
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
----
4. _____   _____
5. _____   _____
6. _____   _____
7. _____   _____
8. _____   _____
9. _____   _____
10._____   _____
11._____   _____

(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
----
4. _____   _____
5. _____   _____
6. _____   _____
7. _____   _____
8. _____   _____
9. _____   _____
10._____   _____
11._____   _____

(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
----
4. _____   _____
5. _____   _____
6. _____   _____
7. _____   _____
8. _____   _____
9. _____   _____
10._____   _____
11._____   _____

(4)

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.]

1. no non-S are T
2. no non-U are S
3. all non-E are non-U
4. all E are W
5. all W are P   /∴   all T are P
----
6. _____   _____
7. _____   _____
8. _____   _____
9. _____   _____
10._____   _____
11._____   _____
12._____   _____
13._____   _____
14._____   _____
15._____   _____
16._____   _____
17._____   _____
18._____   _____

(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.

[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.]

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. _____   _____

(7)

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   ∴   not all non-G are I
----
5. _____ _____
6. _____ _____
7. _____ _____
8. _____ _____
9. _____ _____
10._____ _____
11._____ _____
12._____ _____
13._____ _____
14._____ _____

(8)

"A man's gotta know his limitations" – Dirty Harry (Clint Eastwood), Magnum Force, 1973.

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 im-portant 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 /∴   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   ∴ 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   ∴ some Q are non-U
---- ------------
    5. _____   _____
    6. _____   _____
    7. _____   _____
    8. _____   _____
    9. _____   _____
  10. _____   _____
  11. _____   _____
  12. _____   _____

(3) 1. <u>b</u> is non-M
    2. all S are M
    3. all R are E
    4. no E are non-S   ∴ 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. c is D
     4. all non-Q are M
     5. no S are non-A   ∴ not no A are M
     ---- ----------
         6. _____ _____
         7. _____ _____
         8. _____ _____
         9. _____ _____
        10. _____ _____
        11. _____ _____
        12. _____ _____
        13. _____ _____
        14. _____ _____
        15. _____ _____
        16. _____ _____

(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. _____ _____
         7. _____ _____
         8. _____ _____
         9. _____ _____
        10. _____ _____
        11. _____ _____
        12. _____ _____
        13. _____ _____
        14. _____ _____

(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
     ---- ----------
         6. _____ _____
         7. _____ _____
         8. _____ _____
         9. _____ _____
        10. _____ _____
        11. _____ _____
        12. _____ _____
        13. _____ _____
        14. _____ _____
        15. _____ _____
        16. _____ _____

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, _____

(#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. _____
   _____
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)
   ----
   3. _____   _____
   4. _____   _____

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
   ----
   4. _____   _____
   5. _____   _____
   6. _____   _____
   7. _____   _____
   8. _____   _____

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

4. 1. all N are non-M
   2. some D are B
   3. all B are N
      ∴ ~(all D are M)
   ----
   4. _____   _____
   5. _____   _____
   6. _____   _____
   7. _____   _____
   8. _____   _____
   9. _____   _____

5. 1. (some P are A) V ~(some P are A)
    2. (some P are A) ⊃ (all E are M)
    3. ~(some P are A) ⊃ (no E are M)
        ∴ (all E are M) V (no E are M)
        ∴ (some E are M) ⊃ (all E are M)

    ----
    4. _____   _____
    5. _____   _____
    6. _____   _____
    7. _____   _____

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)
        ∴ (all P are O) & (all P are S) & (all P are B) & (all P are E)

    ----
    3. _____   _____
    4. _____   _____
    5. _____   _____
    6. _____   _____
    7. _____   _____
    8. _____   _____
    9. _____   _____
    10._____   _____
    11._____   _____
    12._____   _____

7. 1. (some P are F) V (no P are F)
    2. (some P are F) ⊃ [(some A are G) & (some A are E)]
    3. (no P are F) ⊃ [(no A are G) & (no A are E)]
        ∴ (some A are E) V (no A are G)

    ----
    4. _____
            _____   __,__,__Dilemma_
    5. _____   _Taut_____
    6. _____   _Taut_____
    7. _____   _____

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)
        ∴ (all non-M are non-R) & (all non-M are non-P)
    3. _____   _____
    4. _____   _____
    5. _____   _____
    6. _____   _____
    7. _____   _____
    8. _____   _____
    9. _____   _____
    10._____   _____
    11._____   _____
    12._____   _____
    13._____   _____