**1**. Show that “She reads or sleeps on the bus” is ambiguous by providing two possible meanings.

|  |  |
| --- | --- |
| *Meaning 1:* | Sometimes she reads, sometimes she sleeps on the bus. |
| *Meaning 2:* | When on the bus she reads or sleeps |

**2**. (a) Use the key provided to classify the proposition pairs expressed by each of the following.

A Contradictories

B Contraries

C Consistent

D None of the above

|  |  |
| --- | --- |
| *Sentence Pair* | *Key choice* |
| At least one of Kirk and Spock is logical. Kirk is illogical. | C |
| At least one of Kirk and Spock is logical. Neither Kirk nor Spock is logical. | A |
| At least one of Kirk and Spock is logical. Kirk is illogical or Spock is illogical. | C |
| Both Kirk and Spock are logical. Neither Kirk nor Spock is logical. | B |

(b) Use the key provided to classify the following arguments.

A Factual error only

B Logical error only

C Both factual and logical errors

D Sound

|  |  |
| --- | --- |
| *Argument* | *Key choice* |
| Some students are industrious. So some students are not industrious. | B |
| If koalas are bears then I’m a monkey’s uncle. Koalas are bears. So I’m a monkeys’ uncle. | A |
| Either Obama or Trump is a Democrat. Trump is not a Democrat. So Obama is a Democrat. | D |
| If I’m right, Obama and Trump are Democrats. Obama and Trump are Democrats. So I’m right. | C |

**3.** *Dictionary:* R  *=* The politician runs for re-election.

O = The politician has an opponent.

D = The politician debates his opponent.

W = The politician wins the debate.

V  *=* The politician persuades the voters.

(a) *Translate* the following *argument* into PL, one formula per sentence, using the *dictionary above*.

The politician will have an opponent if he runs for re-election; and he always debates his opponent when he has one (and vice versa). Whenever he debates, he wins it; moreover, he can't win the debate unless he debates. But he won't debate if he doesn't run for re-election; furthermore, he will persuade the voters if and only if he has an opponent. So, in order for him to win the debate, it's sufficient that he run for re-election.

R → (O /\ D)

D↔W

(¬R→¬D) /\ V↔O

R→W

**4.** Using the argument in part (a) identify examples of each of the following types of propositions. If an example is not found enter “N/A” for your answer. You may combine propositions from different sentences if needed to create a set, but you may not create new propositions.

|  |  |
| --- | --- |
| **Type** | **Example** |
| *Proposition* | The politician will have an opponent. |
| *Negation* | he can't win the debate |
| *Negand* | win the debate |
| *Contradictories* | N/A |
| *Contraries* | N/A |
| *Conjunction* | The politician will have an opponent if he runs for re-election; and he always debates his opponent when he has one |
| *Conjunct* | The politician will have an opponent if he runs for re-election |
| *Disjunction* | N/A |
| *Disjunct* | N/A |
| *Conditional* | The politician will have an opponent if he runs for re-election |
| *Antecedent* | he runs for re-election |
| *Consequent* | The politician will have an opponent |
| *Bi-conditional* | Whenever he debates, he wins it; moreover, he can't win the debate unless he debates |
|  |  |

**[End of Assignment]**