邏輯

＊本次考試使用之邏輯符號如下：
∀：全稱量限號(universal quantifier)
∃：存在量限號(existential quantifier)
¬：否定號(negation)
∨：選言號(disjunction)
∧：連言號(conjunction)
→：條件號(conditional)
↔：雙條件號(biconditional)
＊本考試題目包括 Part I 以及 Part II

Part I （25 分）

一、請使用述詞邏輯(predicate logic)的語言表示下列語句（每題 3 分）：
(1) 沒來上課的學生不是請假就是蹺課。
（Ax: x 是學生；Bx: x 有來上課；Dx: x 請假；Ex: x 蹺課）
(2) 只有狗和貓不能進入公園。
（Ax: x 是狗；Bx: x 是貓；Dx: x 能進入公園）
(3) 每本小說都會被一些讀者劃線。
（Ax: x 是小說；Bx: x 是讀者；Dxy: x 在 y 上劃線）
(4) 沒有政客是不被一些民眾討厭的。
（Ax: x 是政客；Bx: x 是民眾；Dxy: x 討厭 y）
(5) 在所有短篇小說當中賣得最好的那本是張三寫的。
（a: 張三；Ax: x 是短篇小說；Bxy: x 賣得比 y 好；Dxy: x 寫 y）

二、請使用推論規則爲下列論證構作證明（每題 5 分）
(6) 1. $(\forall x)(Wx \wedge Px)$
2. $Sa \vee \neg Sb$
3. $(\forall x)((Wx \wedge Sx) \rightarrow Tx)$　　/　$Ta \wedge Wa$

(7) $(\forall x)(\exists y)(Wx \vee Ty)$　　/　$(\exists y)Ty \vee (\forall x)Wx$

見背面

LOGIC　PART TWO (請任選 3-5 題、總分合計 25%以上作答。)

1. (5%) Briefly describe a (standard) formal language for propositional logic.

2. (5%) Briefly describe the construction of a structure for the standard formal language for propositional logic, as you described in 1. And specify the required semantic rules for the language in use.

3. (5%) In the standard formal language for propositional logic, there are primitive symbols of a certain category known as connectives, or sometimes (logical) operators, such as ¬, ∨,∧, →, and ↔. But exactly what is the meaning of a connective? At the moment there are two different accounts, known as model-theoretic account and proof-theoretic account respectively. Explain what are they?

4. (5%) What is a proposition? Are there propositions? Is there any good reason to suppose that there are propositions? Is there any difficulty with the notion of proposition?

5. (10%) A first order language may include the identity symbol '=' to express the well-known identity relation which is reflexive, symmetric, and transitive. Using your own examples to explain what is a reflexive relation? What is a symmetric relation? And what is a transitive relation? Use sentences of a first order language to formulate these relations, respectively. In first-order logic when identity is included, Leibniz's law holds as well. What is Leibniz's law? Is there any case in which Leibniz's law fails to hold in ordinary discourse? If yes, give your own example. If not, say why not.

6. (10%) In ordinary language, there are singular terms which may have no reference in the actual world. Frege claimed that a sentence with any singular term of this sort would be neither true nor false. But Russell show that although some definite descriptions may have no reference but a sentence with a certain definite description can be reformulated as a conjunction of some quantified sentences in a first order language. And the resulting sentence will have a definite truth value. Give your own example and show how this can be done.

7. (10%) In classical logic (that is, the standard propositional logic and predicate logic you studied in Elementary Logic), the principle of bivalence is presupposed, that is, every sentence must be either true or false but not both. Accordingly, for any formula *A* in classical propositional logic, and for any given structure $\mathcal{M}$, either $\mathcal{M} \vDash A$, or $\mathcal{M} \vDash \neg A$. So the law of excluded middle is merely a tautology. What is the law of excluded middle? But we may establish a logical system in which for some formula *A*, neither *A* nor ¬*A* is true. A logical system which accepts this case is called paracomplete. Give your own example to show that the law of excluded middle is not a logical truth in the paracomplete theory.

8. (10%) In classical logic, a set of sentences, or a logical theory, S is said to be inconsistent if S includes *A* and ¬*A*, for some formula *A*, or both $S \vdash A$ and $S \vdash \neg A$ hold. A logical theory S is *paraconsistent* if it accepts that for some formula *A* both $S \vdash A$ and $S \vdash \neg A$ hold, but there are some B such that $S \nvdash B$. Are there any cases in which $A \wedge \neg A$ is true in a paraconsistent theory? If so, give your own example. If not, show why not.

接次頁

知識論

以下兩題皆須回答，每題分別佔總分之 25%：
（請以數字標明各小題的回答，字跡請力求清晰。）

一、底下是一位知名哲學家的想法，請你仔細閱讀之後，再回答問題：

Those who think knowledge requires something *other than*, or at least *more than*, reliably produced true belief, something (usually) in the way of justification for the belief that one's reliably produced beliefs *are* being reliably produced, have….an obligation to say what benefits this justification is supposed to confer…. Who needs it, and why? If an animal inherits a perfectly reliable belief-generating mechanism, and it also inherits a disposition, everything being equal, to act on the basis of the beliefs so generated, what additional benefits are conferred by a justification that the beliefs are being produced in some reliable way? If there are no additional benefits, what good is this justification? Why should we insist that no one can have knowledge without it?

(1)請從上述的引言當中，分析作者對於「何謂知識？」所採取的立場（在刻劃該立場時，請儘量以條列的方式進行）。(5%)
(2)請提出理由以支持該立場。(5%)
(3)請說明該立場會有的蘊涵(implications)。(5%)
(4)請舉出理由以反對該立場。(5%)
(5)在評估支持和反對的理由之後，你認為該立場是否成立？為什麼？(5%)

二、關於外在世界的經驗知識，有些哲學家認為只有信念能夠提供證成（justification）來支持其他信念。請回答下列各小題：

(1)這種主張涉及到哪些哲學問題？為什麼？
(2)根據前一小題的作答，你贊成這項主張嗎？請提出論證來支持你的立場。
(3)請舉出一個論證和例子來反對你的立場，並予以回應。

試題隨卷繳回