

Ex/PHI/PG/3.5.5/2025

MASTER OF ARTS EXAMINATION, 2025

(2nd Year, 3rd Semester)

PHILOSOPHY

PAPER : PHI/PG/3.5.5

(Logic - II)

Time : Two Hours

Full Marks : 30

1. (a) If S is a formal system in which for each formula A of S, there is a formula A' that on the intended interpretation expresses the negation of A, then prove that if S is simply consistent, it is absolutely consistent.
- (b) If S is a formal system for which it is a metatheorem that $A, A' \vdash_{PS} B$ (where A and B are arbitrary formulas of S and A' expresses the negation of A on the intended interpretation), then if A is absolutely consistent, then prove that it is simply consistent. 5+5=10

(OR)

2. Prove that any p-consistent set of PS is a subset of some maximal p-consistent set of PS. 10
 3. If $\Gamma \cup \{A\} \vdash_{PS} B$, then prove that $\Gamma \vdash_{PS} A \supset B$. 10
- (OR)
4. Prove that PS is both simply and absolutely consistent by model theoretic means. 10

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[Turn Over]

(2)

5. Prove that every theorem of PS is logically valid. 5

(OR)

6. Prove that $\Gamma \cup \{\sim A\}$ is a p-inconsistent set of PS iff $\Gamma \vdash_{PS} A$. 5
7. If a set of formulas of P has a model, then prove that it is a p-consistent set of PS. 5

(OR)

8. For any maximal p-consistent set Γ of PS and any formula A of P prove that exactly one of A and $\sim A$ is in Γ . 5

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