

MASTER OF ARTS EXAMINATION, 2025

2nd Year, 2nd Semester

PHILOSOPHY

Subject Code : PHIL/PG/4.5.5

LOGIC IV

Time : 2 Hours

Full Marks - 30

Answer any *two* questions from the following:

1. Discuss the role of axiom schema of Abstraction in Russell's paradox. 10
2. Define primitive atomic formulas of ZF system. Give a recursive definition of primitive formulas. 2+8
3. Prove the following in ZF set theory : 5×2
 - (i) $A \sim (A \cap B) = A \sim B.$
 - (ii) $A \subseteq B \ \& \ B \subseteq C \rightarrow A \subseteq C.$
4. Prove the following in ZF set theory : 5×2
 - (i) $\cup (A \cup B) = (\cup A) \cup (\cup B).$
 - (ii) $A \subseteq B \rightarrow \cup A \subseteq \cup B.$

Answer any *two* questions from the following:

5. (i) Definition of proper subset in ZF set theory. 2.5×2
(ii) Definition of subset in ZF set theory.
6. Definition of schema of abstraction in ZF set theory. 5
7. (i) Definition of Ordered set in ZF set theory. 2.5×2
(ii) Definition of Union of two sets in ZF set theory.
8. Discuss why the class of all sets cannot be defined in ZF set theory. 5

★ ★ ★