PHT1/2

PHILOSOPHY TRIPOS Part IB

Monday 26th May 2014 13.30 – 16.30

Paper 2

LOGIC

Answer **three** *questions only.*

Write the number of the question at the beginning of each answer. If you are answering an either/or question, indicate the letter as well.

STATIONERY REQUIREMENTS
20 Page Answer Book x 1
Rough Work Pad

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

1. ‘Since one could never be led into contradiction by adopting the law of excluded middle, we might as well abandon intuitionistic logic in favour of classical logic.’ Discuss.

2. EITHER (a) Does the truth of a mathematical theory imply its consistency? Does its consistency imply its truth?

   OR (b) Do the terms ‘line’ and ‘point’ in theories of geometry refer?

3. EITHER (a) State and prove the Completeness Theorem for truth-functional logic.

   OR (b) Offer two clearly distinct proofs of the Disjunctive Normal Form Theorem for truth-functional logic.

4. In what sense, if any, is the validity of arguments determined by their form? Does the same apply to the invalidity of arguments?

5. Does ‘nothing’ stand for something mysterious?

6. To what problem is Frege’s theory of sense a solution? Is it successful?

7. Describe and evaluate Russell’s reasons for adopting his theory of descriptions.

8. EITHER (a) Does one have a full understanding of truth if one endorses all the instances of the T-schema?

   OR (b) Is our ordinary notion of truth paradoxical?

9. Must an empiricist be a semantic holist?

10. EITHER (a) Describe a semantics for the modal logic S5. Show that $\Diamond\Box A \rightarrow \Box A$ is a logical truth of S5.

    OR (b) Give syntactic characterizations of the modal logics K and S5 (i.e. only in terms of axioms and inference rules). Argue that extending K with the schema $\Box A \rightarrow A$ implies the schema $\Box A \rightarrow \Diamond A$, and that extending K with the schema $\Box A \rightarrow \Box\Box A$ implies the schema $\Diamond\Diamond A \rightarrow \Diamond A$.

END OF PAPER