

UNIVERSITY OF LONDON

088 0270

**BA EXAMINATION 2009**

for Internal Students

This paper is also taken by Combined Studies Students

**PHILOSOPHY**

Optional Subject (s): Philosophy of Mathematics

**Tuesday, 5 May 2009: 2.30pm – 5.30pm**

Answer THREE questions. Avoid overlap in your answers.

1. What difficulties face the view that geometry is about geometrical diagrams? Can those difficulties be overcome?
2. Assess the view that the reasoning involved in reaching geometrical theorems about all triangles employs an abstract general idea of triangle.
3. EITHER (a) Did Berkeley and Mill have good reasons for thinking that classical geometry was at best approximately true?  
  
OR (b) Assess Mill's arguments for thinking that geometrical knowledge is based on sensory evidence.
4. Assess Kant's view that geometrical knowledge is *a priori* knowledge about space.
5. EITHER (a) What difficulty faces the view that a cardinal number  $n$  is a multitude of exactly  $n$  units or a set with exactly  $n$  members? Should we say instead that the cardinal number  $n$  is the set of all sets with exactly  $n$  members?  
  
OR (b) Are there insuperable objections to the view that cardinal numbers are size properties of sets?
6. EITHER (a) Assess the view that there are no numbers.  
  
OR (b) Are the numbers of pure arithmetic just numerals?

**TURN OVER**

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7. 'Virtually everything that may be an object of thought may in fact be counted ... From that fact can be gathered this much, that the fundamental principles on which arithmetic is constructed cannot relate to a narrower domain whose peculiarities they express as the axioms of geometry express those of what is spatial. Rather, those fundamental principles must extend to everything thinkable; and a proposition that is in this way of the greatest generality is justifiably assigned to logic.' (Frege). Discuss.
8. EITHER (a) Why is Russell's Paradox a threat to the view that mathematics is logic? Did Russell find a successful way of averting this threat?
- OR (b) Is it an analytic truth that the number of *F*s is the number of *G*s if and only if there is a one-to-one correlation of the *F*s with the *G*s? What hangs on the answer?
9. 'The view that mathematics consists of mental constructions has a decisive advantage over mathematical Platonism: it solves the problem of mathematical knowledge.' Is this true?
10. Explain why and how the intuitionist view of mathematical truth entails rejecting classical propositional logic. Does this entailment constitute an objection to intuitionism?
11. Are there good reasons for doubting that we can think of and refer to actually infinite sets and sequences?
12. What was the goal (or goals) of Hilbert's Programme? What is the significance for philosophy of mathematics of the fact that the Programme is unachievable?
13. Can questions of mathematical existence be resolved by means of Carnap's distinction between internal and external existence questions?
14. 'We are justified in believing a mathematical theory if and only if that theory is indispensable to our best overall scientific worldview.' Is this correct?

**END OF PAPER**