

**UNIVERSITY OF LONDON**

**BA EXAMINATION 2007**

for Internal Students

This paper is also taken by Combined Studies Students

**PHILOSOPHY**

Optional Subject (s): Philosophy of Mathematics

Answer THREE questions. Avoid overlap in your answers.

1. According to Zermelo, 2 is the set  $\{\{\{\}\}\}$ . According to Von Neumann, 2 is the set  $\{\{\}, \{\{\}\}\}$ . Is this disagreement an embarrassment for the view that numbers are sets?
2. Suppose Field is right that there are no numbers and no sets. Does it follow that number theory and set theory are without scientific value?
3. Does Quine succeed in providing an account of how mathematical statements are confirmed?
4. What is a 'structure'? Assess the view that mathematics is 'the science of structures'.
5. According to 'Hume's Principle', the number of *F*s is the number of *G*s if there is a one-one correspondence between the *F*s and the *G*s. In what sense, if any, is Hume's Principle the foundation of arithmetic?
6. 'Aristotle's criticisms of Plato's theory of geometry must be wrong, for unless we postulate a realm containing perfect circles and the like, geometry stands no chance of being true'. Discuss.
7. 'An ascription of number is a predication about a concept.' (Frege.) Does this mean that all concepts have a number attaching to them? If not, what distinguishes those concepts that have a number from those that do not?
8. What are Frege's reasons for treating cardinal numbers as objects? Are they good reasons?

**TURN OVER**

9. Are any geometric truths synthetic a priori?
10. 'Frege's logicism was designed to explain how we know the basic truths of arithmetic. In that aim, it was a total failure, for even if the reduction had succeeded, it would simply have reduced the problem to that of how we know the basic laws of logic, and to the latter problem Frege has no solution.' Discuss.
11. How can we have general geometric thoughts about, e.g. triangles, unless we have abstract general ideas?
12. 'All numbers must be numbers of something; there are no such things as numbers in the abstract. *Ten* must mean ten bodies, or ten sounds, or ten beatings of the pulse.' (Mill.) Assess this claim.
13. Are cardinal numbers mental constructions?
14. Assess the view that our knowledge of basic arithmetic is acquired by inductive generalization from the evidence of the senses.

**END OF PAPER**