

# UNIVERSITY OF LONDON

## BA EXAMINATION

for Internal Students

This paper is also taken by Combined Studies Students

## PHILOSOPHY

Optional Subject (r): Philosophy of Mathematics

Answer THREE questions.

1. 'Diagrams can be helpful as a way of fixing in mind the details of a geometrical question, but are worse than useless as a means of establishing the answer'. Discuss.
2. Compare and assess the following views: (i) The objects studied by pure geometry are, unlike perceptible objects, geometrically perfect; hence they lie beyond the perceptible world. (ii) Pure geometry studies physical objects, but not as physical; it studies them as (approximate) exemplars of geometrical kinds.
3. Explain and assess Berkeley's way of accounting for our knowledge of general principles of geometry without appeal to abstraction.
4. Is there a cogent argument for the view 'that number is entirely the creature of the mind'?
5. Explain and assess Kant's view that mathematical knowledge is synthetic a priori.
6. Does inference to the best explanation have a role to play in our knowledge of mathematical axioms?
7. Is every set of entities with spatio-temporal location itself an entity with spatio-temporal location?
8. Should numbers be associated with physical objects, with concepts, or with classes?
9. In what sense, if any, can numbers and sets be said to exist?

10. How successful was Frege's attempt to reduce arithmetic to logic?
11. Explain the distinction between logical and semantic paradoxes. State one logical paradox and one semantic paradox, and, in each case, give a critical account of one approach to resolving the paradox.
12. What objections can be made to Hilbert's formalist philosophy of mathematics? Can they be overcome?
13. Does mathematics sometimes develop through proofs and refutations?
14. What implications do Wittgenstein's rule-following considerations have for the philosophy of mathematics?
15. If Mr B believes that mathematical objects are human constructions, should he reject the use of the law of the excluded middle in mathematics?
16. Assess Field's claim that there can be 'science without numbers'.
17. 'Mathematics appears thus as a storehouse of abstract forms: the mathematical structures'. Assess the view that mathematics is the science of structures.

END OF PAPER