

Humanities Divisional Board

Approved at the meeting of Faculty Board Trinity term 2023

Preliminary Examination in Mathematics and Philosophy

Brief note about nature of change:

This change replaces one paper examined with another.

Location of change

In *Examination Regulations 2022/23*

<https://examregs.admin.ox.ac.uk/Regulation?code=peimathandphil&srchYear=2022&srchTerm=1&year=2022&term=1>

Effective date

For students starting from MT2024

And

For first examination from 2024/25

Detail of change

~~^{1.7}D. Elements of Deductive Logic~~

- ~~• ^{1.8}Subjects to be studied include: propositional and predicate languages; truth tables; Natural Deduction; relations; the critical application of formal logic to the analysis of English sentences and inferences (problems of symbolization; scope, truth-functionality, quantification, identity, descriptions); elementary metatheorems about propositional calculus (including the following topics: expressive adequacy, duality, substitution, interpolation, compactness, consistency, soundness and completeness). Some questions of a mathematical nature will be set.~~

~~^{1.9}These subjects shall be studied in conjunction with Volker Halbach's *Introduction to Logic* manual, published by Oxford University Press. The logical~~

~~symbols to be used are those found in this publication. Philosophical questions about logic may be studied by reading Mark Sainsbury, *Logical Forms*, 1st or 2nd edition (Blackwell), Chapters 1-2.~~

D. Philosophical Topics in Logic and Probability

The paper shall consist of three sections:

A. Introduction to Logic

Subjects to be studied include: syntax and semantics of propositional and predicate logic, identity and definite descriptions, proofs in Natural Deduction, and the critical application of formal logic to the analysis of English sentences and arguments. These topics shall be studied in conjunction with Volker Halbach's *Introduction to Logic* manual, published by Oxford University Press. The logical symbols to be used are those found in this publication.

B. Philosophical topics in Logic.

Subjects to be studied include: Putnam's model-theoretic argument; Skolem's paradox.

C. Philosophical topics in Probability.

Subjects to be studied include: technical basics (including field/algebra of events; Kolmogorov axioms; finite vs. sigma-additivity; definition of conditional probability; elementary useful theorems; definition of a Bernoulli trial/i.i.d. sequence; Bernoulli's Theorem; and Bayes' Theorem); matters of application (including applications of probabilities; conditionalisation; correlations and screening off; probability of a conditional vs conditional probability; Bayesian jargon; and frequentist jargon); and interpretations of probabilities (including classical probability; logical probability; personal probability; frequentism; and propensities).

Candidates shall be required to attempt questions from at least two sections. Proper study of the Faculty reading list for each section will serve as complete preparation for that section.

Explanatory Notes

The Faculty has decided to replace the current *Elements of Deductive Logic* paper with a new *Philosophical Topics in Logic in Probability* paper. This was approved at joint standing committee and at Philosophy Faculty Board.