

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

Bachelor of Science Honours Degree in Science Education (HBScEd MT)

Part 1.1

MTE112: History and Philosophy of Mathematics

Duration 3 hours

Semester Examinations

INSTRUCTIONS

- (i) Answer **Three** questions
- (ii) Begin each question on a fresh page
- (iii) Each question carries 100 marks

JAN 2025

1. (a) Distinguish between inductive and deductive forms of mathematical reasoning. [5 marks]
(b), Select one concept from school mathematics and discuss how you teach it using:
(i) inductive teaching approach, [7 marks]
(ii) deductive teaching approach. [7 marks]
(c). Suggest three factors that account for the dominance of inductive instruction in school mathematics learning. [6 marks]
2. Discuss four philosophies of mathematics and their implications for classroom practice. [25 marks]
3. One of the major goals of mathematics education is to promote a balance in the five pillars of mathematical proficiency (Kilpatrick et al. 2001). Evaluate this assertion. [25 marks]
4. Discuss the assertion that: "The history of mathematics lacking the guidance of philosophy is blind while the philosophy of mathematics turning its back on the most intriguing phenomena in the history of mathematics is empty" (Lakatos, 1970, p.135).
5. It was inconceivable to mathematicians of the 19th century that there could exist an algebra different from arithmetic algebra. Discuss how this was shattered by the liberation of algebra. [25 marks]

END OF PAPER