UNIVERSITY OF CAMBRIDGE

MATHEMATICAL TRIPOS Part III

Tuesday, 14 June, 2011 9:00 am to 12:00 pm

PAPER 76

SET THEORY

*Attempt no more than **FOUR** questions.*

*There are **SIX** questions in total.*

The questions carry equal weight.

STATIONERY REQUIREMENTS
Cover sheet
Treasury Tag
Script paper

SPECIAL REQUIREMENTS
None

You may not start to read the questions printed on the subsequent pages until instructed to do so by the Invigilator.

1

State and prove Fodor's theorem on regressive functions and stationary sets.

2

State and prove Solovay's theorem on partitioning stationary sets into many stationary sets.

3

State and prove Silver's theorem on powers of singular cardinals.

4

State and prove the theorem of Erdős and Rado on the existence of monochromatic sets for partitions of sets of unordered k-tuples from uncountable sets.

5

What is a normal measure?

Let κ be a measurable cardinal, D a normal measure on κ, and F a partition of $[\kappa]^{<\omega}$ into fewer than κ pieces. Show that there is a set $H \in D$ that is monochromatic for F.

Explain why this implies that every measurable cardinal is Ramsey.

6

State and prove the Reflection Principle.

END OF PAPER