# MA3486, Annual Examination 2018 Syllabus of Examinable Material

David R. Wilkins

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### Section 1

Students should be familiar with the statements of the results presented in Section 1, so that they can be used in the proof of lemmas, propositions, theorems and corollaries in subsequent sections, and in solving problems based on the material of later sections. The proofs of results in Section 1 are not themselves examinable.

#### Section 2

Candidates should in particular be familiar with the definition of the following: correspondence, closed-valued correspondence, compact-valued correspondence, lower hemicontinuity of a correspondence, upper hemicontinuity of a correspondence, correspondence with closed graph.

Lemma 2.1 Lemma 2.2 Lemma 2.3 Lemma 2.4 Lemma 2.5 Proposition 2.6 Lemma 2.7 Lemma 2.8 (statement only) Proposition 2.9 Proposition 2.11 Proposition 2.12 Lemma 2.14 Lemma 2.15 Proposition 2.16 Theorem 2.23 (statement only)

#### Section 3

Candidates should in particular be familiar with the definition of the following: simplex, face of a simplex, proper face of a simplex, interior of a simplex, barycentric coordinates on a simplex, convex set.

Lemma 3.1 Lemma 3.2 Lemma 3.3 Lemma 3.4 Lemma 3.5

## Section 4

Candidates should in particular be familiar with the definition of the following: *simplicial complex*, *dimension* of a simplicial complex, *polyhedron* of a simplicial complex, *barycentre* of a simplex, *first barycentric subdivision* of a simplicial complex. *mesh* of a simplicial complex, *simplicial map*, *simplicial approximation*, *star neighbourhood*,

Lemma 4.4 Lemma 4.5 Lemma 4.6 Lemma 4.10 Lemma 4.11 Lemma 4.12 Lemma 4.14

#### Section 5

Candidates should in particular be familiar with the definition of the following: *Sperner labelling*,

Lemma 5.1 Proposition 5.2 Theorem 5.3 Theorem 5.4 (statement only)

## Section 6

Candidates should in particular be familiar with the definition of the following: *non-negative matrix, positive matrix, Perron root* of a positive matrix. Lemma 6.1 Lemma 6.2 Proposition 6.3 Proposition 6.4 Proposition 6.5

# Section 7

Candidates should in particular be familiar with the definition of the following: *quasiconcave function. quasiconvex function.* 

Theorem 7.1 Lemma 7.2

## Section 8

Proposition 8.2 Proposition 8.3 Proposition 8.4 Theorem 8.10 Proposition 8.12