

Feedback on MATH43051/63051 Model Theory Exam, January 2016

Q1 This, including the harder parts (c) and (d), was done well. Note that in (b) it is necessary to deal with images of terms, showing that $\alpha(t^{\mathcal{M}}(\bar{a})) = t^{\mathcal{M}}(\alpha(\bar{a}))$, before dealing with formulas, both terms and formulas being dealt with by induction on complexity. It is necessary in (b) to keep a clear idea of what is a formula, what is a term and what is an element (in particular, terms with variables all substituted by values are elements). There was a good variety of (correct and decent attempts at) methods of solution for (c) and (d).

Q2 Some people got in a bit of a mess with (b), which is a little tricky if you don't start at the right place (to check the condition for Tarski's Lemma). Part (c) was done ok. Part (d) either could be done by a version of (c) which starts with a given finite partial isomorphism or could be done from (c) as stated, applied to intervals of the form (a_i, a_{i+1}) in \mathcal{M} and in \mathcal{N} .

Q3 Parts (a)-(c) (bookwork) were done ok. Part (d) was hard, given the time limitation, but a few people did come up with an example. Part (e) was done pretty well, with a variety of solutions being given.

Q4 Part (a) was quite well done, though a few people didn't point out that $z \notin Z$. Parts (b)(ii) and (b)(iii) did require a good understanding of how to use the Compactness Theorem for successful solution.

Overall, the exam was a bit tough in that a good number of parts of questions were difficult to tackle (and gain (m)any marks on) if understanding was not very solid.