Q1. a) i) Most students have answered this question correctly. However, most students do not follow the clear lay-out for writing induction proofs which was stressed upon in class multiple times. Also, starting the proof with assuming LHS=RHS is not a good way to write a proof, which a number of students have done.

a) ii) Fewer students got this right compared to (i). Same comments about format and style applies here as well.

a) iii) Many students got this wrong. They were not able to deal with the inequality. We have done similar examples in class. Again, the problem came from not following the steps and format of the answer properly.

b) i) I was surprised at how many students got this wrong. Also, a number of answers did not include a justification. The question clearly says ‘justify your answer’.

b) ii) Question clearly says ‘prove by counterexample’. Many students have tried to write long justifications and argue logically, but the question clearly requires a counterexample.

2.a) i) Almost everyone got the digraph correct. Many people got the rest of the question right as well. Most students haven’t given a justification or explanation for why they arrived at a -certain conclusion, but that’s OK, since it wasn’t explicitly asked.

b) ii) Many people got it right, but most people didn’t give an answer to the equivalence classes part, or got it wrong.

b) Many students got this right. Some students drew digraphs, others listed the set, either is fine.

c) i) Students didn’t give any explanation for this as well, for why they came to the conclusions that they did, but it’s OK, wasn’t explicitly asked for. Many students got it right.

c) ii) Many students forgot that they should only draw lines between the successive levels, and not, for example, from 000 to 111.

Q3. Overall very good. Part (a) was done very well by most students, with only the odd calculation error or mis/unremembered definition. Part (b) was also attempted generally competently by most candidates, although the later parts (esp. v) caused difficulties for weaker students.

Q4. The elementary matrix computations in part (a) were done almost uniformly correctly, with only a very occasional arithmetic error. Part (b) caused rather more problems: weaker students floundered completely; the majority displayed a good grasp of the right general ideas, but relatively few were able to put all the necessary ideas together entirely correctly.