This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of
the examination. It shows the basis on which Examiners were instructed to award marks. It does not
indicate the details of the discussions that took place at an Examiners’ meeting before marking began,
which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner
Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE
Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1 (a) table of results for Experiment 1
- initial and final volume boxes completed correctly (1)
- difference box correctly completed (1)
- comparable to supervisors (1) ± 2 cm³

(b) table of results for Experiment 2
- initial and final volume boxes completed correctly (1)
- difference box correctly completed (1)
- comparable to supervisors (1) ± 2 cm³
- all readings to 1 dp (1)

(c) fizzing / bubbles, etc. (1)

(d) (i) pink (1)
   - not: purple
   - to colourless (1)
   - not: clear

   (ii) orange / pink (1)

(e) (i) alkalis (1)
   - not: bases

   (ii) carbonate / carbon dioxide (1)

(f) (i) difference in expt 1 – difference in expt 2 (1)
   - cm³ (1)

   (ii) 2 × difference in expt 2 (1)

   (iii) greater volume needed to react with T (1)
   - allow: ecf from (i) and (ii)

(g) (i) $4 \times$ difference value expt 1 (1)
   - $4 \times$ difference value expt 2 (1)
   - four times volume of solution R (1)

   (ii) volume of acid used > 50 cm³ / more than burette can hold (1)
   - set up two burettes / fill burette twice (1)
   - guidance: reference to impurities (max 1)
2 tests on solid U

(a) pink (1)

powder / crystals (1) [2]

(b) drops / condensation (1)

blackens / brown / dark solid (1) [2]

(c) any five from:
beige / (pale) brown (1)
precipitate (1)
fizzes / bubbles (1)
glowing splint (1)
relights (1)
black / darkens (1) [5]

(d) beige / (pale) brown precipitate (1) [1]

(e) white (1)

precipitate (1) [2]

(f) no reaction / change / no precipitate (1) [1]

(g) not a chloride / halide (1) [1]

(h) oxygen / $O_2$ (1) [1]

(i) any three from:
sulfate (1)
hydrated salt (1)
transition metal (1)
catalyst (1) [3]