MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers

0620 CHEMISTRY

0620/61 Paper 6 (Alternative to Practical), maximum raw mark 60

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1. (a) beaker (1)

(b) (i) (arrow) labelled heat in correct position under shaded crystals (1)

(ii) arrow labelled water in test-tube at or below the level of the ice (1) [2]

(c) to cool/condense the water or steam/owtte (1) [1]

(d) physical test  ignore chemical tests
boiling point/freezing point (1)
100/0°C (1) [2]

2. (a) any two variables max 2
- volume
- concentration of acid allow amount
- volume of sodium thiosulfate/total volume of solution
- temperature
- printed sheet
- same size flask
 ignore reference to pressure/catalyst/surface area/light max [2]

(b) straight line drawn with a ruler, missing anomalous point but touching all other points (1)
 not multiple lines [1]

(c) any two sensible errors that could be from same category max 2
- qualified measurement error  e.g. volume
- qualified timing error
- recording error
- plotting error
- temperature variation
- contamination from previous experiment
 not systematic error max [2]

(d) 0.056–0.064 range (1) indication on graph (1) [2]

(e) more particles/particles closer together (1) more collisions (1) [2]

(f) sketch straight line to the LEFT of the original (1) [1]
3 (a) chromatography (1) [1]

(b) water (1) [1]

(c) origin/base line/datum (1) [1]

ignore references to start/initial/pencil

(d) sweet C has 4 colours (1)
    sweet D has 3 colours (1)
    allow C has one more colour/more colours than D for one mark
    2 colours are the same (1) [3]

4 Experiment 1

(a) and (b) initial and final volumes completed correctly (1) 0.0, 32.0 [1]

Experiment 2

initial and final volumes completed correctly (1) 19.0, 35.0 [1]

all readings in both experiments to 1 decimal place (1)
both differences correctly calculated (1) [4]

(c) oxygen(1) [1]

(d) (i) colourless not clear to purple/pink (1) or reverse [1]

    (ii) potassium manganate is coloured/owtte (1)
    accept is not an acid/alkali reaction [1]

(e) (i) experiment 1(1) allow ecf [1]

    (ii) experiment 1 2× volume of experiment 2 [1]

    (iii) solution B more concentrated/stronger (1) or converse
          2× as concentrated (2) [2]

(f) half value from table result for experiment 2 / 8 (1) cm³ (1)
    half volume of peroxide used (1) [3]

(g) advantage easy to use/quick/convenient/fairly accurate (1)
    disadvantage not accurate owtte (1) [2]

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5  (a) (ii) colourless (1) allow yellow no smell (1)  [2]

(b) (ii) extinguished/owtte (1)  [1]

(d) yellow (1) precipitate (1)  [2]

(e) organic (1) allow hydrocarbon fuel/alcohol/named alcohol (1) allow flammable  [2]

6  (a) diagram of a filter paper in a funnel (1) label funnel/filter paper (1)  [2]

(b) 0.45, 0.95, 1.40, 1.90, 2.35 and 2.35 (2), –1 for each incorrect up to 2  [2]

(c) all points plotted correctly (2), –1 for each incorrect point up to 2
two intersecting straight lines (1) ignore origin  [3]

(d) 5 cm³ (1) ignore unit  [1]

7  (a) appropriate test (1) result (1)  [2]
e.g.
pH paper or named indicator 11–14 or correct colour
named metal salt solution/ion correct colour precipitate
ammonium salt/heat ammonia/owtte

(b) fizzy drinks may be acidic/contain carbon dioxide (1)
chlorine formed (1) toxic (1) max [2]

(c) answer connected to health and safety (1)
allow to affect the environment/to clean it  [1]

(d) litmus/pH/UI paper (1) bleached owtte (1)  [2]

[Total: 60]