
PHYSICAL SCIENCE

0652/62

Paper 6 Alternative to Practical

October/November 2017

MARK SCHEME

Maximum Mark: 60

Published

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This document consists of **5** printed pages.

| Question | Answer | Marks |
|-----------|--|-------|
| 1(a)(i) | 23.5 ; | 1 |
| 1(a)(ii) | 5.0, 3.0, 16.5 ; | 1 |
| 1(b)(i) | most = N then L and least = M ; faster bubbles means (metal) more reactive ; highest temperature (change) means (metal) more reactive ; | 3 |
| 1(b)(ii) | pieces (of metal) same shape / same mass (of metal) / same subdivision / same surface area / same acid concentration ; | 1 |
| 1(c) | lighted splint AND pop ; | 1 |
| 1(d)(i) | Filtration / filter(ing) ; | 1 |
| 1(d)(ii) | sodium hydroxide (solution) / ammonia solution / aqueous ammonia / ammonium hydroxide ; | 1 |
| 1(d)(iii) | iron / Fe ; | 1 |

| Question | Answer | Marks |
|----------|---|-------|
| 2(a) | (G is) sulfuric acid ; acid and carbonate gives carbon dioxide ; | 2 |
| 2(b) | (D is) iron(III) nitrate ; (E and H are) sodium hydroxide and ammonia (but order not known) / (E and H are) alkalis / alkaline ; | 2 |
| 2(c) | (F is) barium chloride ; barium chloride gives white ppt. with sulphate / sulfuric acid / acid ; | 2 |

| Question | Answer | Marks |
|----------|---|-------|
| 2(d) | copper sulfate solution ; excess sodium hydroxide gives blue ppt. ; excess ammonia gives dark blue solution ; | 3 |
| 2(e) | barium chloride / F and white ppt. ; | 1 |

| Question | Answer | Marks |
|----------|--|--------|
| 3(a)(i) | s, °C, °C ; | 1 |
| 3(b) | 84 ; | 1 |
| 3(c) | 79 ; | 1 |
| 3(d) | to allow thermometer reading to attain maximum temperature / wtte ; | 1 |
| 3(e) | (No significant effect) as very similar / same drop in temp. ; in same time ; OR (Decreases) as smaller drop in temp. ; in same time ; | 1 1 |
| 3(f)(i) | use a lid ; | 1 |
| 3(f)(ii) | lag the bottom of the beaker / thicker insulation / avp ; | 1 |
| 3(g) | Any 2 from: room temperature ; initial hot water temperature ; volume / amount of water ; | 2 |

| Question | Answer | Marks |
|-----------|---|-------|
| 4(a)(i) | 4.0 ± 0.1 ; | 1 |
| 4(a)(ii) | 20.0 ; | 1 |
| 4(a)(iii) | inverted triangle seen ; | 1 |
| 4(b)(i) | 80.0, 67.5, 64.0 all values correct ; | 1 |
| 4(b)(i) | Any 1 from: move screen slowly to / fro until sharpest focus obtained ; repeat each reading <u>and</u> average ; object / lens / screen perpendicular to bench ; object and lens same height above the bench ; carry out experiment away from other bright light sources / darkened room ; | 1 |
| 4(c)(i) | plots correct to half a small square, at least 6 correct ; good best-fit curve judgement ; | 2 |
| 4(c)(i) | 60 ± 0.5 ; | 1 |
| 4(d) | 15 ; 2/3 s.f. only | 2 |

| Question | Answer | Marks |
|-----------|----------------------|-------|
| 5(a)(i) | measuring cylinder ; | 1 |
| 5(a)(ii) | conical flask ; | 1 |
| 5(b)(i) | 25.08 ; | 1 |
| 5(b)(ii) | 77.20 ; | 1 |
| 5(b)(iii) | 76.15 / 76.16 ; | 1 |

| Question | Answer | Marks |
|----------|--|-------|
| 5(b)(iv) | 77.20 plotted \pm half small square and curve completed ; | 1 |
| 5(c)(i) | rate decreases as acid concentration decreases ; | 1 |
| 5(c)(ii) | temperature affects rate/to ensure temperature has remained constant ; | 1 |
| 5(d)(i) | Volume / amount of gas ; | 1 |
| 5(d)(ii) | diagram showing gas syringe / inverted measuring cylinder over water ; | 1 |

| Question | Answer | Marks |
|----------|--|-------|
| 6(a) | 12 ; | 1 |
| 6(b) | aluminium absorbs / stops alpha and beta ; gamma rays pass through ; | 2 |
| 6(c) | 877, 220, 97, 55, 36, 25 | 1 |
| 6(d) | suitable choice of scales linear and half the grid used ; all 6 plots correct to half a small square scores 2 marks ; 5 correct scores 1 ; smooth curve ; | 4 |
| 6(e)(i) | distant from source owtte ; | 1 |
| 6(e)(ii) | protective clothing / use tongs / short exposure time / keep source in lead-lined container ; | 1 |