

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

5054 PHYSICS

5054/41

Paper 4 (Alternative to Practical), maximum raw mark 30

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Page 2	Mark Scheme	Syllabus	Paper
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- 1 (a) N pole B1
- (b) (i) simple means of suspension B1
good practical detail, e.g. string stirrup/at the centre stated B1
- (ii) means of floating magnet, e.g. place on block of wood/polystyrene/foam/object that floats/on a float B1
- (c) statement + explanation, e.g. water due to (more) friction/resistance B1

[Total: 5]

- 2 (a) (i) remove excess water/water that has not been absorbed owtte/shake off the drops/no drips (on bench)/avoid spillage/remove surface water/to do the same each time B1
- (ii) whole towel would absorb all the water B1
to obtain different values for different volumes/to get a large range of values/to get more results owtte
- (iii) Any one: B1
takes too long to cut squares/do experiment
only small amount of water removed each time/do not absorb enough water
- (b) (i) axes correct way round, labelled quantity and unit B1
scales linear, sensible B1
points plotted accurately within $\frac{1}{2}$ small square B1
neat crosses or small points (in circle)
best fit straight line drawn B1
- (ii) 0.49 ± 0.02 at least 2 sf ignore unit B1
- (iii) furthest point from line/anomalous point/
does not fit on line/does not fit the pattern B1
- (iv) $32 \pm 0.5 \text{ cm}^3$ unit required B1
- (c) white towels + explanation, e.g. B1
more squares needed for yellow towels ORA/steeper gradient means more towels needed per unit volume
- (d) statement + explanation B1
B to make a fair comparison/experiment/result of the material/to keep the same conditions/number does not matter – it is the absorbency that does matter

[Total: 12]

Page 3	Mark Scheme	Syllabus	Paper
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- 3 (a) (i) ray from A to screen through pinhole B1
ray from B to screen through pinhole B1
 $17 \pm 2^\circ$ B1
- (ii) use of longer lines, e.g. use of rays on left hand side of pinhole/extend rays on right/measure the angle from both rays/measure angle at both sides of the intersection B1
- (iii) ray from A forms bottom of image or a with B/ image is real /rays of light cross or intersect/rays of light meet at the pinhole (before the screen) B1
- (b) light from A spread out/diverge on screen/form more than one image/ rays from A do not meet (at a point on screen) B1
- [Total: 6]**

- 4 (a) (i) two values accurately marked and labelled C1
all three accurately marked and labelled A1
- (ii) 46 mm cao
48 mm cao
2 mm cao
two correct with at least one unit C1
all three correct with units A1
- (iii) Answers in range 17 100 to 17 250 min 2 sf C1
 $17\,000\text{ mm}^3/17\text{ cm}^3$ A1
- (b) vernier/micrometer/calipers/depth gauge
ruler (with no dead space) **both needed** B1
- [Total: 7]**