

Experiment



Asian
Physics
Olympiad
Adelaide 2019

A2-1

English (Official)

Wave pulses in a magnetically active fluid (10 points)

Part A: Plane pulses (1.3 points)

A.1 (0.3 pt)

Diagram of setup:

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A.2 (0.8 pt)



A.2 (cont.)

A.3 (0.2 pt)

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Part B: Waves pulses in fluid of varying depth (3.4 points)

Waves pulses in fluid of varying depth

B.1 (0.3 pt)

Diagram:

$d(y) =$

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A2-5

English (Official)

B.2 (0.3 pt)



B.3 (0.3 pt)

(i)

(ii)

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B.4 (1.2 pt)



B.4 (cont.)

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A2-10

English (Official)

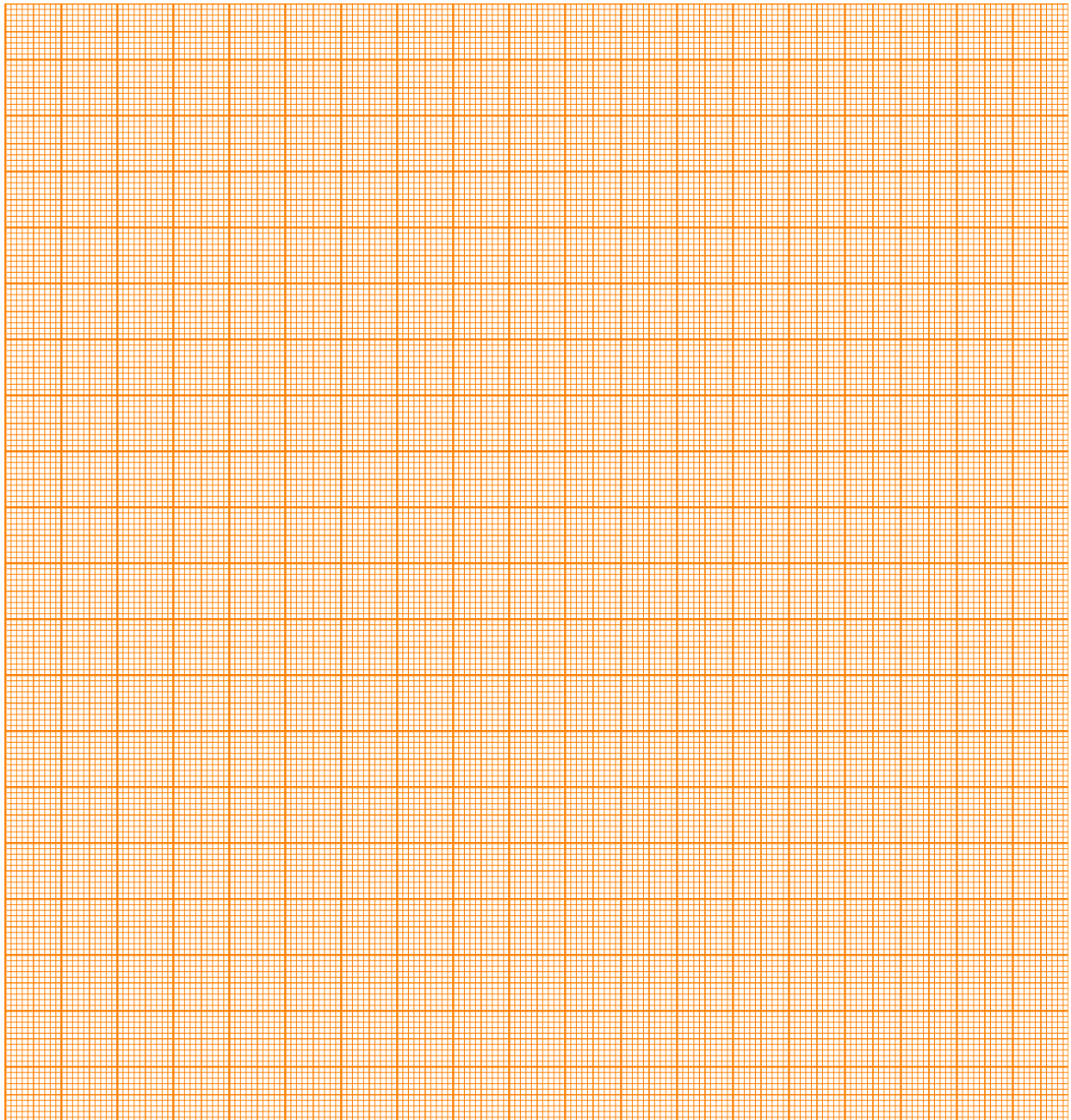
B.5 (1.3 pt)

$\kappa =$

$\Delta\kappa =$



B.5 (cont.)



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Part C: Wave and magnetic effects (1.8 points)

C.1 (1.8 pt)

mechanically by sliding the container on the wooden base

mechanically by sliding the wooden base with the container fixed in place on top

pulses magnetically by rapidly withdrawing a magnet from near to the ferrofluid



Part D: Internal properties of ferrofluid within a strong magnetic field (3.5 points)

D.1 (0.2 pt)

D.2 (0.8 pt)



D.2 (cont.)

D.3 (0.4 pt)

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A2-15

English (Official)

D.4 (0.3 pt)

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A2-16

English (Official)

D.5 (1 pt)

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D.6 (0.8 pt)

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A2-18

English (Official)

Additional graph paper

