

Name: .....

Country: .....

## Answer Sheet

### Secret Behind the Delicious Juices

#### IV A. Identifying a Substance

Observation results:

If color change and correct for base and acid → score 1 of each material.

Max.  $6 \times 1 = 6$

If classification correct → score 0.5 for each material

Max.  $6 \times 0.5 = 3$

Total score 9

#### IV B. Changing the Acidity

[1] Answer: any color of litmus paper score 1

[2] or [3] Answer: without volume score 2

With volume score 4

Total score = 5

#### IV C. Making Batteries

[3] Results.

Pair of electrodes		Strawberry Juice
Electrode-1	Electrode-2	Measured Voltage
Iron	iron	$\approx 0$
Iron	zinc	401 mV

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Iron	copper	458 mV
Iron	Stainless steel	6.3 mV
Zinc	zinc	$\approx 0$
Zinc	copper	880 mV
Zinc	Stainless steel	712 mV
Copper	copper	$\approx 0$
Copper	Stainless steel	56.6 mV
Stainless steel	Stainless steel	$\approx 0$

For each measure voltage score 1 (if the value close enough to real one.)

Max. Score 10

[4] The best combination of pair electrodes are Cooper and Zinc.

(1 for each correct electrode). Max. score 2

Juices	Observed voltage
Strawberry	880 mV
Pineapple	920 mV
Orange	950 mV
Sour-sop	970 mV

Score 0.5 for each correct voltage

→ max. score 3.5

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[5] Juice: Sour-sop (score 0.5)

Juice volume	Observed voltage	Score
Volume 1 (done)		
Volume 2	Acceptable value	1
Volume 3	Acceptable value	0.5

Max. score 2

[6] Juice: .....

Volume of water	Observed voltage	Score
5 spoons	Acceptable value	1
10 spoons	Acceptable value	0.5
15 spoons	Acceptable value	0.5

Max score: 2

## V Conclusion

Acceptable conclusion (Max. score 3.5)