2019 Sec 1E End-of-Year Examination Marking Scheme

Section A

1	2	3	4	5	6	7	8	9	10
C	C	C	C	C	B	D	A	A	B
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A	D	D	B	B	D	C	C	A	D

Section B

1 No eating in the Science laboratory; wear safety goggles when heating.
[accept any two correct answers]

2 J and L
IV ; 2

3 (a) Mass = 0.93 – 0.23
= 0.7 g [M1]

density = 0.7 / (0.50)
=1.4 g/cm^3 [A1]

(b) (i) Solution Q; The leaf floats in the middle of the solution.
(ii) Adding salt made the solution Q increase in mass hence increase its density; The leaf is now lower density than the solution R.

4 (a) Presence of chloroplast; presence of one large central vacuole;

(b) no cell wall;

5 (a) The higher the temperature, the faster the sugar cube dissolves.
(b) Mass of sugar cube; volume of water; Type of sugar; size of sugar cube

[accept any two correct answers]

(c) temperature of the water
(d) Beaker N
(e) stir the water; break the sugar cube into smaller pieces or (increase surface area)

6 (a) handle: rubber/ plastic/ wood, poor conductor of heat/ insulator of heat
Kettle: metal, good conductor of heat
(b) arrangement: disorderly;
Movement: slide past one another;

7 (a) 2000 x 0.8 [M1] = 1600 J [A1]
(b) (i) Gravitational potential energy
(ii) gravitational potential energy → kinetic energy → gravitational potential energy
One correct [1], All correct [2]

Section C

8 (a) fractionating column;

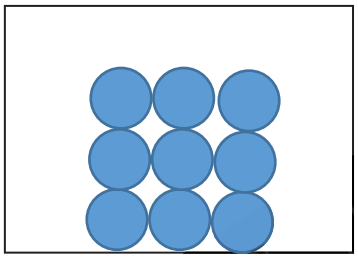
(b) to measure the temperature of the vapour before it enters the condenser.

(c) change the gas into a liquid/ measure the temperature of the substance distilling over.

(d) (i) ethanol;

(ii) it has a lower boiling point

(iii) particle model of solid, at least 3 x 3



9 Use a magnet to remove iron filings; add water; filter to remove chalk as residue; crystallise filtrate to obtain sugar from sugar solution

10 (a) $\text{Pressure} = \frac{\text{force}}{\text{area}}$

$= \frac{30}{0.010}$[M1]

$= 3000\ \text{N/m}^2$[A1]

$\text{pressure} = \frac{\text{force}}{\text{area}}$

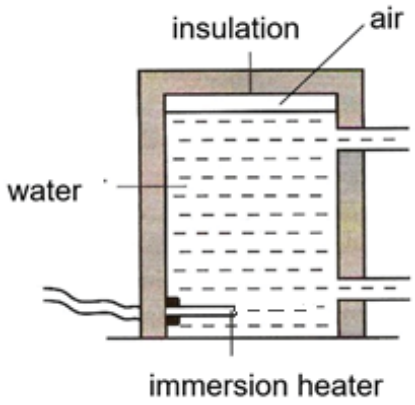
$3000 = \frac{\text{force}}{0.50}$

$\text{force} = 3000 \times 0.50$[M1]

$= 1500\ \text{N}$ [A1]

Note: allow ECF

(b) (i)



(ii)

(iii) Water at the bottom gets heated up by the immersion heater. They expands and density decreases; Hot water rises and cold water sinks;

(c) Black colour is a good emitter of heat / large surface area allows heat to be transmitted by radiation efficiently;
Fin is in contact with the computer chip so conduction of heat from chip to fin is faster/ Fins are made of metal which is a good conductor of heat;