

Movement in and out of the Cells

Mark Scheme

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Movement in and out of Cells
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Mark Scheme

Time Allowed: 23 minutes

Score: /19

Percentage: /100

1 (a) (i)

	egg in water	egg in salt solution
size	larger / bigger / increased / check measurement + units if given <i>I turgid; normal; same; no change</i>	smaller / shrunk / decreased check measurement + units if given; <i>I flaccid</i>
position in liquid	not floating / sunk / on the bottom / low / goes down	floating / in the middle / suspended / goes up and down / AW; <i>I half submerged</i>
external appearance of the egg	smooth / oval / round / turgid / regular <i>I intact / harder / firm / same as / normal</i>	wrinkled / uneven / rough / flaccid / uneven / zigzagged / irregular / lumpy / bumpy / deformed / distorted ; <i>I soft</i>

allow 1 mark per row.

ignore reference to weight / mass / density.

[3]

(ii) 1. osmosis;

2. in water gained water; (*direction of movement in correct solution*)
[if refer to endosmosis – marking points 1 and 2]
3. water surrounding egg higher water potential / less solutes / more dilute / AW than inside egg / water gradient / water potential gradient / hypotonic hypertonic / water concentration; *[accept if in correct context]*
4. in salt solution – lost water; (*direction of movement in correct solution*)
[if refer to exosmosis – marking points 1 and 4]
5. solution surrounding egg lower water potential / more solutes / more concentrated in solutes / water potential gradient / hypotonic / hypertonic / AW than egg;
[allow 1 mark for saying the opposite without giving full details for marking points 4 and 5]
6. membrane is partially permeable / AW;
7. AVP e.g. referring to floating / sinking / shape changes in respective solutions;
please record number for point awarded beside tick.
ignore reference to weight / mass / density.

[max 5]

- (b) (i) S both axes scaled evenly to use more than half the grid for the line;
P plot points accurately; [$\pm 1/2$ small square]
L line of best fit / points joined by ruled line;

Bar chart or histogram S and P (check column heights) Max 2.

Use letters S, P and L to record ticks or Xs in that sequence. Allow minor extrapolation of line especially with line of best fit.

[3]

- (ii) check graph for answer but need correct units $\pm 0.5\text{g dm}^3$ or g / dm^3 or g dm^{-3} ;
cannot award for bar charts and histograms.

[1]

- (iii) 1. water entering = water leaving / no net water movements / water not gained or lost;
2. balanced concentration / isotonic/ equal / equilibrium / ψ are equal / amount of salt water / water is equal;
3. no osmosis / no diffusion of water / no water potential gradient / no concentration gradient / AW; [*this is an easy mark to gain*]

[3]

- (c) 1. biuret test / Millon's test / xanthoproteic test;
2. add biuret A / biuret 1 / sodium / potassium hydroxide / NaOH / KOH **and** biuret B / biuret 2 / copper sulphate / Millons reagent [contains mercury] and needs heat / xanthoproteic [contains nitric acid] and heat;
3. same quantity of reagent (*independent of correct reagent*);
4. equal sample; *I reference to grinding egg or cooking egg.*
5. purple / lilac / mauve (or red for Millon's) (yellow for xanthoproteic);
6. darker / deeper / richer / AW purple / red / yellow with more protein or *vice versa* paler for less protein; [*accept even if wrong colour is rejected for marking point 6*]

I time references.

7. AVP e.g. colour of yolk interferes with end result;

[max 4]

[Total: 19]