Broadrick Secondary School
Secondary 1 Express End of Year Examination (2019)
LOWER SECONDARY SCIENCE
MARKING SCHEME

Section A MCQ

1	2	3	4	5	6	7	8	9	10
C	C	B	B	D	D	A	C	C	B
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
D	D	B	C	D	C	A	A	D	C
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
C	B	A	A	A	D	D	D	A	C

Section B

1(a)	Pressure is the force acting **per** unit area.	[1]
(b)	Force on each supporting pillar = $1.6 \times 10^6 / 4$ = 400 000 N pressure = $\frac{force}{area}$ = $\frac{400\,000}{0.8}$ [1] = 500 000 N/ m^2 [1]	[2]
(c)	Would not recommend the use of any of the materials.	[1]
	The pressure exerted by the bridge is greater than the maximum pressure the raw material can support.	[1]
2(a)	Work done is the **product** of the force and the distance moved by the object in the direction of the force.	[1]
(b)	No work done. Waiter is **exerting an upward force on the tray** OR **tray is not moving in the same direction as the force applied.**	[1] [1]
(c)	Total force = 70.**5** x 10 = 705 N Distance moved in direction of force = 4m Work done = 705 x **4** = 2820 J	[1] [1]

3(a)	Energy cannot be created or destroyed but converted from one form to another.	[1]
(b)	Energy is loss when the ball bounce up / same energy is converted to sound/heat	[1]
(c)	Potential energy = mgh = 3 x 10 x **8** = 240 J	[1]
(d)	Initial potential energy = 3 x 10 x 10 = 300 J Potential energy after first bounce = 240 J Energy loss = 300 – 240 = 60 J	[1] [1]

4	**(a)**	An element is a pure substance that **cannot be broken down** into two or more simpler substances by **chemical processes**	[2]
	(b)	Na, C*l*	[1]
	(c)	•A compound is a white powder, has different properties from its elements grey solid, and pale green gas - A chemical reaction (solid burns with yellow flame) has occurred to produce the compound •A compound is edible and non-poisonous while one of its elements is poisonous (chlorine is poisonous) (Any 2 of the evidences stated.)	[2]
5	**(a)**	Experiments 1 and 2	[1]
	(b)	Experiment 1 and 3	[1]
	(c)	Stirring	[1]
6		Rust has a fixed/definite composition while a steel has variable/does not have a fixed composition. Rust has properties different from its iron or oxygen while steel has properties of its oxygen or carbon. Rust can only be separated by chemical methods while steel can be separated using physical methods. Rust is a pure substance but Steel is not a pure substance. Rust is made up of iron and oxygen chemically combined while steel is made up iron and carbon not chemically / physically combined. (Any 2 of the differences stated.)	[2]

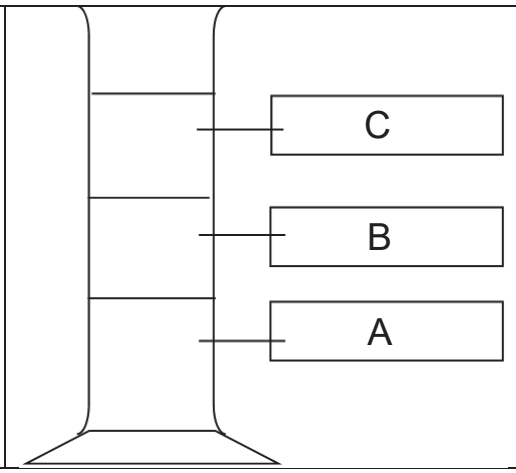
7	**(a)**	osmosis		1
	(b)	C		
	(c)	**(i)**	5.6 – 2.0 = 3.6 g (answer + unit)	[1]
		(ii)	Statement: (any 1) • raisins have gained mass **and** become bigger / larger • raisins have become heavier **and** become bigger / larger Explanation: (any 2) • distilled water has a **higher water potential** (accept reverse argument) than the cells of the raisins; • water **moves into** the **raisin** cells **by osmosis** from the distilled water (do not award 1m if student does not state process osmosis) • causing the cells to **increase in size / expand and become heavier**.	
8	**(a)**	A: cell membrane / plasma membrane / cell surface membrane B: nucleus (deduct 1m if spelling is incorrect)		1 1
	(b)	**(i)**	• red blood cell **does not contain nucleus** but the cheek cell does • red blood cell has a **biconcave shape** but the cheek cell is circular (reject presence of haemoglobin, because that cannot be seen from Fig)	1 1
		(ii)	No nucleus: **more space** to have more haemoglobin so to **transport more oxygen** Biconcave shape: **increase surface area** to volume ratio to allow **oxygen** to **diffuse in and out rapidly**.	Any 1
9	**(a)**	P: Artery Q: Vein R: Capillary (Any mistake, deduct 1m), must be 2 correct to get 1 mark.		
	(b)	Tissue T is thicker in P so that P can **withstand** the **high blood** pressure and **not burst.** (student must make reference to high blood pressure and not bursting)		1

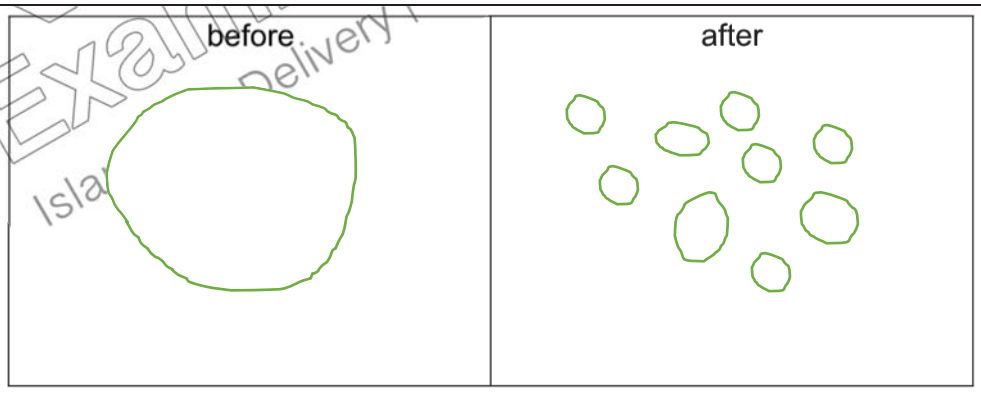
	(c)	**<u>Exchange of substances</u>** between the <u>blood</u> and <u>body tissues / cells</u>	1

Section C

10	**(a)**	**(i)** X, Y ,Z	[1]
		(ii) Dye Z (1m) It travels the **furthest away** from the starting line. (1m)	[2]
		(iii) F1 (1m) F1 contains the illegal dye W. (1m)	[2]
		(iv) It **does not dissolve** in water thus **will not interfere with the results**.	[1]
	(b)	1. **Use magnet** to remove **iron filing. (1m)** 2. **Add water** to the **remaining mixture of common salt and chalk and stir** to **dissolve** common salt. **(1m)** 3. **Filter** the mixture to obtain chalk as residue. (1m) 4. **Evaporate the filtrate** collected to obtain dry common salt (1m)	[4]

11(a)	Density is the mass per unit volume.	[1]
	SI unit : kg/ m^3	[1]
(b)	Mass of liquid = 223.09 – 102.53 = 120.56 g [1] Volume of liquid = 150 cm^3 Density = $\frac{120.56}{150}$ = 0.804 g/cm^3 (3 s.f) [1]	
(c)(i)	Independent variable: volume of liquid	[1]
	Dependent variable : mass of liquid	[1]
(c)(ii)	Liquid A [1], for the same volume it has the highest mass. [1]	
(c)(iii)		[2]



12	**(a)**	**B:** oesophagus **C:** stomach **D:** small intestine	1 1 1
	(b)	To **increase surface area** of food; To **speed up** the **rate of digestion** by **enzymes** / to increase the speed of digestion by enzymes	1 1
	(c)	No, there are no enzymes secreted by B Yes, the enzymes in the saliva are still working on the food pieces as it does down B	1 1
	(d)	**(i)** 	
		(ii) **Increase surface area** to volume ratio; **Speed up** chemical digestion by **lipase** / enables lipase digestion of fats to be faster / faster rate of digestion of fats by lipase (note: students must mention lipase enzyme to be award the 1m)	1 1

		(iii)	A: II C: I	Must hv 2 to get 1 m