MC Answer (Q1-29)

AAACA DCBBD BCADA ADDCC AAAADDDAC

MC Q27 Option update:

Which of the following is an underlying assumption of this experimental design?

A. Yeast cells will ferment better in the sucrose solution than in any sugar substitute solution.
B. All tested zero-calorie sugar substitute solutions are nutritious enough to support yeast life.
C. The rate of bubble production indicates the rate of yeast fermentation.
~~D. The boiled distilled water is the best control solution because it contains no nutrients.~~

*D. The CO2 produced does not dissolve in all the tested solution

P.310 Question 01

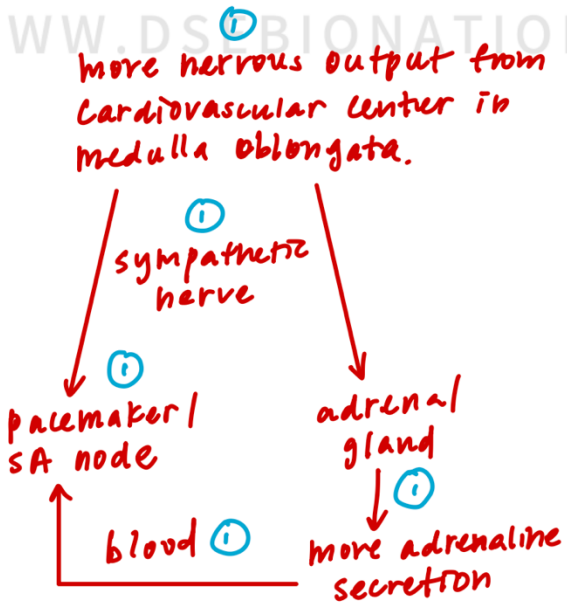
(a)	• X: *Granum / Grana (1)
(b)	• Thylakoid stack up to form granum • Increasing surface area for packing more chlorophyll to maximize light absorption for photochemical reaction
(c)	• Grana of leaf B are thicker / consist of more stacks of membrane / have more thylakoid membrane than that of leaf A (1) • The density of grana of leaf B is higher than that of the leaf A / grana of leaf B are more densely packed (1) • Thicker grana hold / high density of grana holds more chlorophyll to absorb as much light as possible / to increase the chance of receiving light (1) • Even at low light intensities, the photosynthetic rate of leaf B is high (1)
(c)	• having a low compensation point, leaf B can have a higher photosynthetic rate than respiratory rate even at low light intensities (1) • it allows leaf B to have a net production of food (1)

P.312 Question 02

(a)	(i)	• Being homozygous for the mutated alleles, they fail to produce any B chains for haemoglobin (I) • Without ß chains / with only a chains, haemoglobin cannot be formed (I) hence, • Their red blood cells lack normal haemoglobin to carry oxygen (1)
	(ii)	• aged red blood cell will be metabolized in liver (1) • with iron being retained for formation of new red blood cells (1) • however, these patients could not make use of the excess iron group (1) resulting in the accumulation of iron in liver
(b)	(i)	• bone marrow contains stem cells that are capable of producing normal red blood cells (1)
	(ii)	• yes • the cells of bone marrow are somatic cells (1), • therefore, the genetic composition of the gamete producing cells will not be altered after the transplant (1) therefore, the mutated allele will still be passed onto the next generation
(c)	• people who are heterozygous still have the normal copy of the gene to produce functional hacmoglobin (1) • this does not affect the survival and / or reproductive chances of the person who bears the defective allele (1) • therefore, they can still pass the defective allele to the next generation (I)	

P.327 Question 02

(a)	• Digestion of a high-carbohydrate meal produces a large amount of simple sugars, such as glucose. • The absorption of glucose increases the blood glucose level, which stimulates the pancreas to secrete more insulin. Under the action of insulin, a large amount of glycogen will be formed from the simple sugars in the liver. • This provides additional glycogen storage in the liver and muscles to serve as an energy reserve for use during the race.
(b)	• During muscle contraction in the race, the rate of respiration increases, meaning more heat is produced and the body temperature rises beyond the normal level. • Sweating is stimulated to increase heat loss through evaporation. • A continuous supply of water by drinking is necessary to maintain continuous sweating. • This prevents the core body temperature from reaching an unsafe level. • Therefore, it prevents the disruption of normal body functions and metabolism.
(c)	• Sweating leads to water loss, which causes a decrease in the water potential of the blood. • This decrease is detected by osmoreceptors in the hypothalamus, leading to an increased release of antidiuretic hormone (ADH) from the pituitary gland. • The increased ADH level increases the permeability of the collecting duct, resulting in a larger proportion of water being reabsorbed.
(d)	• Increased muscle contraction leads to a higher rate of respiration, which produces more carbon dioxide and causes a decrease in blood pH. • This decrease in blood pH is detected by chemoreceptors in the medulla oblongata, which are then stimulated.

	• More nerve impulses are sent from the respiratory centre to the intercostal muscles and the diaphragm. • This causes the intercostal muscles and diaphragm to contract more strongly and more frequently.
(e)	• It allows for an increased oxygen intake, • which enhances the breakdown of lactic acid. • It facilitates an increased removal of carbon dioxide from the blood and muscles • which helps to restore normal blood and muscle pH.
(f)	• Heart failure leads to a decreased strength of cardiac muscle contraction, resulting in a lower blood pressure. • This lower blood pressure decreases the rate of ultrafiltration within the Bowman's capsule. • Consequently, there is a decrease in the volume of glomerular filtrate formed. • This leads to an overall decrease in urine output. • As a result, there will be an increased amount of urea, salts, and water remaining in the blood.
(g)	

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GOOD-BYE & THANK YOU ALL