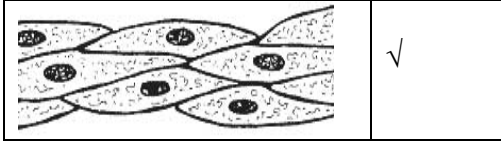


SCORING CRITERIA PAPER 2

Question 1

Num.	Scoring Criteria	Marks	
(a)(i)	<p><i>Able to name the level organization of muscle P</i></p> <p>Answer: Tissue</p>	1	1m
(a)(ii)	<p><i>Able to (✓) the correct type of muscle</i></p> <p>Answer:</p> 	1	1m
(b)(i)	<p><i>Able to name organelle abundantly in muscle P</i></p> <p>Answer: mitochondria</p>	1	1m
(b)(ii)	<p><i>Able to justify</i></p> <p>Answer:</p> <p>P1 : to generate energy P2 : by cellular respiration P3 : for contraction of muscle P4 : to enable bird flight</p>	1 1 1 1	2m
(c)(i)	<p><i>Able to name tissue</i></p> <p>Answer: Tendon</p>	1	1m
(c)(ii)	<p><i>Able to state one characteristics</i></p> <p>Answer: Inelastic // strong</p>	1	1m
(d)	<p><i>Able to explain the effect of the locomotion if muscle P is torn</i></p> <p>Answer:</p> <p>F : muscle P cannot contract P1 : pulling force cannot be create / transfered to the bone P2 : so bone cannot be pulled upwards / forwards // upstroke P3 : bird cannot flight</p>	1 1 1 1	max 3m
(e)	<p><i>Able to explain how the stem cell able to becomes tissue P, Q and R.</i></p> <p>Answer:</p> <p>P1 : through differentiation P2 : the stem cell becomes specialized cells P3 : such as nerve tissue / muscle tissue / blood tissue / connective tissue</p> <p style="text-align: right;"><i>Any two</i></p>	1 1 1	max 2m
TOTAL		12	

Question 2

Num.	Scoring Criteria	Marks	
(a)(i)	Able to identify the types of polysaccharide <i>Answer:</i> X : starch Y : glycogen Z : Cellulose	1 1 1 1	2m 1m 0m Max 2
(a)(ii)	Able to state the basic unit of polysaccharide <i>Answer:</i> Glucose	1	1
(a)(iii)	Able to explain the hydrolysis of starch <i>Suggested answer:</i> P1: through enzymatic reaction // by hydrolysis process P2: by using enzyme amylase	1 1	2
(b)(i)	Able to name molecule P <i>Answer:</i> Sucrose	1	1
(b)(ii)	Able to name process X and Y <i>Answer:</i> X : condensation Y : hydrolysis	1 1	2
(c)	Able to explain the assimilation of glucose <i>Suggested answer:</i> <u>F1: In the liver</u> P1 : Excess of glucose in the blood is converted to glycogen and stored in the liver P2 : In the liver , if glucose level in blood is low glycogen is converted to glucose P3 : Excess of glycogen is converted to lipids by the liver <u>F2: In the body cell</u> P4 : Reaching the body cells , glucose is oxidized to release energy in cellular respiration	1 1 1 1 1 1	Max 4
TOTAL		12	

Question 3

Num	Scoring criteria	Marks																			
(a)(i)	Able to name structure R R : Grana	1	1																		
(a)(ii)	Able to state one similarity and one differences between the product of light reaction and dark reaction. Similarity : S1 : Both rection occur in chloroplast Differences: <table border="1" data-bbox="300 629 1232 860"> <thead> <tr> <th data-bbox="300 629 767 667">F:</th> <th data-bbox="767 629 1232 667">Reaction in R</th> <th data-bbox="767 629 1232 667">Reaction in S</th> </tr> </thead> <tbody> <tr> <td data-bbox="300 667 767 705">D1 :</td> <td data-bbox="767 667 1232 705">Occur in grana</td> <td data-bbox="767 667 1232 705">Occur in stroma</td> </tr> <tr> <td data-bbox="300 705 767 743">D2 :</td> <td data-bbox="767 705 1232 743">Needs light</td> <td data-bbox="767 705 1232 743">Does not need light</td> </tr> <tr> <td data-bbox="300 743 767 781">D3 :</td> <td data-bbox="767 743 1232 781">Produce oxygen (and water)</td> <td data-bbox="767 743 1232 781">Produce glucose</td> </tr> <tr> <td data-bbox="300 781 767 819">D4 :</td> <td data-bbox="767 781 1232 819">Not involve enzyme</td> <td data-bbox="767 781 1232 819">Involve enzyme</td> </tr> <tr> <td data-bbox="300 819 767 860">D5 :</td> <td data-bbox="767 819 1232 860">Photolysis of water</td> <td data-bbox="767 819 1232 860">Reduction of carbon dioxide</td> </tr> </tbody> </table> (any 2)	F:	Reaction in R	Reaction in S	D1 :	Occur in grana	Occur in stroma	D2 :	Needs light	Does not need light	D3 :	Produce oxygen (and water)	Produce glucose	D4 :	Not involve enzyme	Involve enzyme	D5 :	Photolysis of water	Reduction of carbon dioxide	1	3
F:	Reaction in R	Reaction in S																			
D1 :	Occur in grana	Occur in stroma																			
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D5 :	Photolysis of water	Reduction of carbon dioxide																			
(b)	Able to explain the effects to the mechanism of dark reaction if the plant is exposed to the light for 24 hours everyday. P1 : <u>more</u> hydrogen (ions/atoms) are produced during light reaction P2 : <u>more</u> carbon dioxide can be fix by hydrogen atom P3 : <u>more</u> glucose/amino acid/fatty acid are produced P4 : rate of dark reaction increase	1 1 1 1	2																		
(c)	Able to explain how the condition of the environment affects the rate of photosynthesis of the plant. F1 : dust particle will cover/accumulate on the surface of the leaf P1 : less light energy will be trapped by the chloroplast F2 : dust particle block the stomata P2 : less/no supply of carbon dioxide into the cell P3 : rate of photosynthesis decreases	1 1 1 1 1	3																		
(d)	Able to explain how this method is carried out during winter to ensure the production of crops throughout the year. F : In winter, the temperature is very low//light intensity is low and the rate of photosynthesis is very low P1 : in the greenhouse, light intensity/concentration of carbon dioxide/temperature are maintained at optimum level (for photosynthesis) throughout the year. P2 : so the rate of photosynthesis is maintain at maximum level throughout the year P3 : this will increase yields of crops production throughout the year	1 1 1 1	3																		
Total		12																			

Question 4

Num	Scoring Criteria	Marks	
(a)	<p>Able to name two systems involve in regulating of respiratory gases</p> <p><i>Answer:</i> Blood circulatory system // Respiratory system // Nerves system <i>Any two</i></p>	2	2
(b)(i)	<p>Able to explain why the blood pH decrease</p> <p><i>Answer:</i> P1: Increase of carbon dioxide in blood P2: Carbon dioxide reacts with water (in blood plasma) P3: Formed carbonic acids</p>	1 1 1	Max 2
(b)(ii)	<p>Able to explain how a drop in pH value of the blood can be detected by the body</p> <p><i>Answer:</i> P1: Detected by the peripheral chemoreceptors P2: Send nerve impulses to the central chemoreceptors / respiratory centre</p>	1 1	2
(c)	<p>Able to describe how to regulate the concentration of oxygen in the blood</p> <p><i>Suggested answer:</i> P1: Level of oxygen in blood decrease detected by peripheral chemoreceptors P2: Nerve impulse send to central chemoreceptors (in medulla oblongata) P3: Impulse send to diaphragm / and intercostals muscles and cardiac muscles P4: Breathing rate and heart beat rate increase P5: Intake more oxygen</p>	1 1 1 1 1	Max 3
(d)	<p>Able to explain the effects of smoking on his heartbeat rate and breathing rate.</p> <p><i>Suggested answer:</i> F: Higher heartbeat rate and breathing rate P1: carbon monoxide (in blood) combine with haemoglobin P2: cause him to breath faster / and deeper P3: to obtain more oxygen P4: Nicotine in blood cause release of adrenaline P5: and make the heart pump faster</p>	1 1 1 1 1 1	Max 3
Total			12

(c)(i)	<p>Able to describe type of immunization based on the graph</p> <p><i>Suggested answer</i></p> <p><u>Diagram 5.3 (a):</u></p> <p>P1: Injection P is vaccin // contains a weakened / dead patogens // vaccination</p> <p>P2: to stimulate white blood cells/lymphocyte/B-lymphocyte to produce antibody // the body gain the ability/immunity against the disease/hepatitis B//the antibody able to destroy pathogene/antigen//Artificial (Acquire) Active Immunity <i>Accept: Fight against the pathogene /antigen</i> <i>Reject: Fight against the disease</i></p> <p>P3: Need a booster / second injection of vaccine (after a few years of vaccination) will stimulate the lymphocyte to produce <u>more</u> antibodies quickly</p> <p>P4: stimulates a quicker and longer lasting response // the concentration of antibodies in the body will be able to reach the effective immunity level //and can induce a long lasting immunity // to ensure that the level of antibody (in the body) is enough to give protection against the pathogen</p> <p>F : Hepatitis B / Any suitable example</p>	1 1 1 1 1	Max 3
(c)(ii)	<p><u>Diagram 5.3 (b):</u></p> <p>Q1: Injection Q is serum / antiserum //contains ready-made antibody against a particular disease/tetanus</p> <p>Q2: (The antibody) is injected directly into the blood/body and react <u>immediately</u> against the specific antigens (in the body) /to give <u>immediately</u> protection against the disease / tetanus // Concentration of antibodies increases <u>immediately</u> and exceeds level of immunity</p> <p>Q3: The injection serum (antibody) can only induced a short lived immunity /quick temporary immunity //the level of antibody decrease rapidly // Type of immunity cannot last for several weeks or months (because the foreign antibodies break down in the body and are not replaced)</p> <p>F: Tetanus / Any suitable example</p>	1 1 1 1	Max 3
TOTAL			12

6(c)	<p>Able to describe briefly the mechanism of osmoregulation if a person</p> <p>(i) Drinking too much water</p> <p>F1: cause the osmotic pressure of blood is lower 1</p> <p>P1: the osmoreceptor in the hypothalamus are less stimulated/ the pituitary gland is less stimulated 1</p> <p>P2: less ADH is secreted. 1</p> <p>P3: causes distal convoluted tubule and collecting duct become impermeable to water . 1</p> <p>P4: less water is reabsorbed 1</p> <p>P5: the blood osmotic pressure rises to normal 1</p> <p>(ii) Eating too much salty foods</p> <p>F2: cause the osmotic pressure of blood is higher 1</p> <p>P6: the osmoreceptor cells in the hypothalamus are stimulated /the pituitary gland is stimulated 1</p> <p>P7: more ADH is secreted. 1</p> <p>P8 ; causes the distal convoluted tubule and collecting duct become more permeable to water . 1</p> <p>P9: more water is reabsorbed 1</p> <p>P10: the blood osmotic pressure drops to normal 1</p> <p style="text-align: right;">Maximum</p>		<p>Any 5</p> <p>Any 5</p> <p>10</p>
TOTAL			20

Question 7

Num	Mark Scheme	Mark	
(a)(i)	<p>Able to name 4 types of hormone,</p> <p>P- Hormon Estrogen 1</p> <p>Q- Hormon Progesteron 1</p> <p>X- Hormon FSH 1</p> <p>Y- Hormon LH 1</p>		4 Marks
a(ii)	<p>Able to explain based on the following criteria: <u>Explanation</u> related to <u>hormonal level</u>, <u>follicle</u> development and <u>the endometrial wall</u></p> <p><u>Sample answer:</u></p> <p>F1: The pituitary gland starts to secrete FSH to the ovary. 1</p> <p>E1- The level of FSH in the ovary begins to increase. 1</p> <p>E2-FSH stimulates the development of the follicles 1</p> <p>E3-The follicle starts to develop /becomes bigger/follicle primer and secondary follicle 1</p> <p>E4-FSH also stimulates the ovarian tissues to secrete oestrogen. 1</p>		Any 2

Question 8

Num	MARK SCHEME	MARKS											
(a)(i)	<p><i>Able to define Mendel Second Law</i></p> <p>Sample Answer</p> <p>P1: Each pair of alleles control the trait of organism// alleles TT/Tt/tt control trait tall or dwarf</p> <p>P2: During gamete formation, each member of allele TT/Tt/tt may combine <u>randomly</u> with either member of pair of allele AA/Aa/aa</p>	1											
		1	2										
(a)(ii)	<p><i>Able to write down the genotypes of the parents of each cross and illustrate the inheritance of cross I using schematic diagram.</i></p> <p>Sample answer</p> <table border="1" data-bbox="316 869 1050 1088"> <thead> <tr> <th>Cross</th> <th>Parent's genotypes</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>TtAa x ttaa</td> </tr> <tr> <td>II</td> <td>TtAA x TtAA</td> </tr> <tr> <td>III</td> <td>TtAa x Ttaa</td> </tr> <tr> <td>IV</td> <td>ttAA x TTaa</td> </tr> </tbody> </table> <p>Parent's genotype : TtAa x ttaa</p> <p>meiosis</p> <p>Gametes : TA, Ta, tA, ta, ta</p> <p>random fertilization</p> <p>Offspring's genotype : TtAa, Ttaa, ttAa, ttaa</p> <p>offspring's phenotype : tall, axial; tall, terminal; dwarf, axial; dwarf, terminal</p> <p>phenotypic ratio : 1 : 1 : 1 : 1</p> <p>notes : <i>gametes 1</i> <i>meiosis and random fertilisation 1</i> <i>offspring 1</i> <i>ratio 1</i></p>	Cross	Parent's genotypes	I	TtAa x ttaa	II	TtAA x TtAA	III	TtAa x Ttaa	IV	ttAA x TTaa	1	
Cross	Parent's genotypes												
I	TtAa x ttaa												
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III	TtAa x Ttaa												
IV	ttAA x TTaa												
		1											
		1											
		1											
		1											
		1	8										

8(b)(i)	<p><i>Able to explain the differences between diagram 8.1 and 8.2</i></p> <p><i>Sample answer</i></p> <table border="1" data-bbox="316 304 1142 640"> <thead> <tr> <th data-bbox="316 304 722 353"><i>Diagram 8.1</i></th> <th data-bbox="730 304 1142 353"><i>Diagram 8.2</i></th> </tr> </thead> <tbody> <tr> <td data-bbox="316 360 722 409"><i>Down's syndrome</i></td> <td data-bbox="730 360 1142 409"><i>Turner's syndrome</i></td> </tr> <tr> <td data-bbox="316 416 722 528"><i>Extra one autosome at chromosome 21</i></td> <td data-bbox="730 416 1142 528"><i>Lack one X chromosome</i></td> </tr> <tr> <td data-bbox="316 535 722 584"><i>Male</i></td> <td data-bbox="730 535 1142 584"><i>Female</i></td> </tr> <tr> <td data-bbox="316 591 722 640"><i>47 chromosome</i></td> <td data-bbox="730 591 1142 640"><i>45 chromosome</i></td> </tr> </tbody> </table>	<i>Diagram 8.1</i>	<i>Diagram 8.2</i>	<i>Down's syndrome</i>	<i>Turner's syndrome</i>	<i>Extra one autosome at chromosome 21</i>	<i>Lack one X chromosome</i>	<i>Male</i>	<i>Female</i>	<i>47 chromosome</i>	<i>45 chromosome</i>	1 1 1 1	4 marks
<i>Diagram 8.1</i>	<i>Diagram 8.2</i>												
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<i>47 chromosome</i>	<i>45 chromosome</i>												
8(b)(ii)	<p><i>Able to explain why color blinds often occur in men as opposed to women and suggest ways to overcome color blindness in a family</i></p> <p><i>Sample Answer;</i></p> <p>P1 ; colour blindness is cause by recessive allele on X chromosome</p> <p>P2 : in male, the presence of one recessive allele on X chromosomes produce colour blindness (due Y does not carry any alleles for colour blindness)</p> <p>P3 : in female, the presence of one recessive allele on X chromosomes do not produce colour blindness but only a carrier</p> <p>P4 ; the presence of both recessive allele on X chromosomes produce colour blindness</p> <p>P5 ; using gene therapy to treat hereditary disease</p> <p>P6 : by insertion of genes into an individual's cells or tissue</p> <p>P7 : by marriage to eliminate recessive in next generation</p> <p>P8 : marry a person those homozygote dominant for normal colour vision</p>	1 1 1 1 1 1 1 1 Any 6	max 6										
<i>TOTAL</i>		20 Marks											

Question 9

Num	Scoring Criteria	Marks	
(a)(i)	<p>Able to explain the function of bacteria X , bacteria Y and bacteria Q in nitrogen cycle</p> <p>suggested answer:</p> <p>F1: Bacteria X is decomposer P1: When fish eats the plants, the organic nitrogen is transferred into the body of fish P2: when the fish and plant die, P3: Bacteria X will decompose / break down dead plant and animals to ammonia F2: bacteria Y is <i>Nitrosomonas</i> sp. / nitrifying bacteria P4: converted ammonia /NH₃ into nitrites/ NO₂ P5: by nitrifying process F3: bacteria Q is <i>Nitrobacter</i> sp. / nitrifying bacteria P6: converted nitrites/ NO₂ into nitrates/ NO₃</p>	<p>1 1 1 1 1 1 1 1 1</p>	<p>Max 7</p>
(ii)	<p>Able to explain the effect if there is no bacteria X in the pond ecosystem</p> <p>Suggested answer:</p> <p>F1: decomposition of dead animals, plant and the waste products does not occur P1: this increases the organics wastes on the pond ecosystem F2:Natural cycle such as carbon cycle / nitrogen cycle are disrupted P2: because carbon and nitrogen remains in the death F3: The soil becomes infertile and photosynthesis will not occur</p>	<p>1 1 1 1</p>	<p>max 3</p>
(b)(i)	<p>Able to explain the causes which contribute to the increasing concentration of carbon dioxide in the atmosphere and the effects to the environment.</p> <p>Suggested answer :</p> <p>Causes :</p> <p>C1: the increasing number of vehicles// factories C2: (Vehicles//factories) release a large amount of carbon dioxide C3: reducing of the area of forest/ jungle// increasing of deforestation C4: less carbon dioxide is used by plants for photosynthesis C5:power station used fossil fuel to generate electricity</p> <p style="text-align: right;">(any three)</p>	<p>1 1 1 1 1</p>	<p>Max 3</p>

	<p>Effect:</p> <p>E1: Carbon dioxide is a greenhouse gas</p> <p>E2: able to absorb a (big quantity) of heat // Carbon dioxide reflect heat back to the Earth</p> <p>E3: cause greenhouse effect</p> <p>E4 : lead to global warming</p> <p>E5: melting of ice at the poles// any suitable examples of the effect of global warming</p> <p style="text-align: right;">(any two)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Max</p> <p>2</p>
(ii)	<p>Able to explain the impact of ozone depletion and global warming to the ecosystem.</p> <p>Suggested answer:</p> <p>Impact of ozone depletion:</p> <p>D1: contribute to global warming</p> <p>D2: climate change</p> <p>D3: decrease in crop yields</p> <p>G1: melting of iceberg/ sea level increase</p> <p>G2: increase the temperature of sea water and can destroy reef coral</p> <p>G3: migration of animals to the new habitat</p> <p>G4 : drought/ flash flood</p> <p style="text-align: right;">(any five)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>Max</p> <p>5</p>
	TOTAL		20