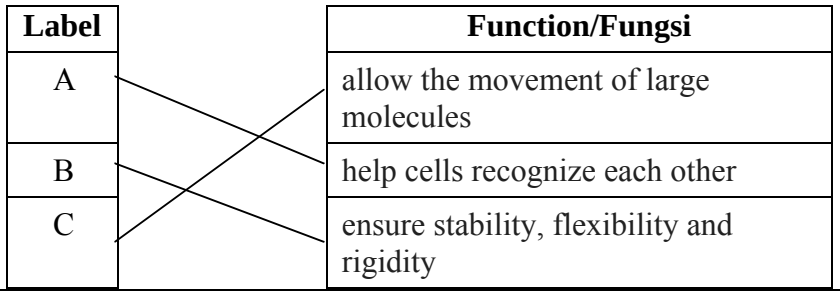
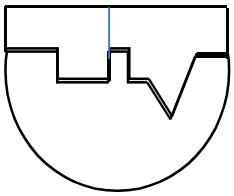
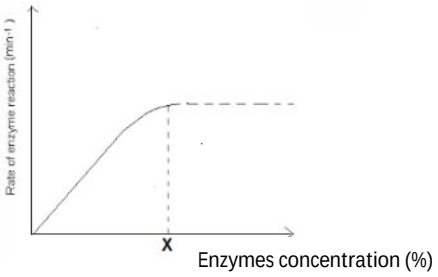
PERATURAN PEMARKAHARAN: Kertas 2

NUM	SCORING CRITERIA	MARKS	
1(a)	Able tomatch the label A,B and C  	3/ = 2m 2/=1m	2m
1(b)(i) 1 (b)(ii)	Able to give the characteristics of labeled D *Answer*: Hydrophilic (head) which attract to water Able to explain how it affects the characteristics of D *Answer:* Easier for water molecule movement / osmosis	 1 1	 2m
1(c)(i) 1c(ii)	Able to name a material and why is important to living organisms. *Suggested answer:* F:mineral ions / ion Ca^{2+}, ion K^{+}, Na^{+}/ any examples E: ion Ca^{2+} in formation of bones // ion K+ in muscle contraction / impulse transmission // any correct functions of minerals in F *Notes: E is corresponding to F* Able to explain if the structure C is broken, *Suggested answer:* F1: mineral ions / any example is transported via carrier protein E1: by facilitated diffusion	 1 1 1 1	 2m 2m
1(d)	**Able to** explain the effect of the respirational poison towards the transportation of substance across plasma membrane *Suggested answer:* P1: poison retard the respiration process P2: This is due to no formation of energy. P3: Active transport does not occur.	 1 1 1	 Max 2

1(e)	Able to explain why plasma membrane is considered a fluid mosaic model *Suggested answer:* P1: protein molecules embedded / floating randomly in phospholipid bilayer P2: protein molecules always moving / dynamic and fliud structure	 1 1	 2m
		Total	**12m**

Num.	**Scoring Criteria**	**Marks**	
2(a)(i)	*Able to labeled X,Y and Z* **Answer:** X : Sucrose Y: Glucose // fructose Z : Fructose // glucose	 √3 √2 √1	 2m 1m 0m
2(a)(ii)	*Able to complete a diagram of enzyme- substrate complex* **Answer:** 	 1	 1m
2(b)(i)	*Able to state **two** characteristic of enzyme* **Answer:** P1 : Enzymes reaction is highly specific P2 : Enzyme does not change at the end of reaction P3 : Riversible in action (Any two)	 1 1 1	 2m
2(c)(i)	*Able to* explain the reaction of enzymes **Answer:** F : Increase of enzymes concentration will increase rate of enzymatic reaction (until it reach a maximum point) P1 : due to more active site is available to bind with a substrates P2 : More substrates will bind at the active site of the enzymes to form enzymes-substrate complex P3 : produce more products Any 3	 1 1 1 1	 Max 3m

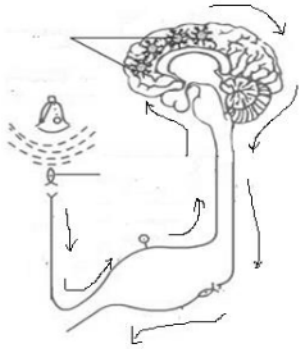
2(c)(ii)	*Able to*show the enzyme activity in Diagram 2.2 **Answer:**  	1	1
2(d)	*Able to name the enzyme* **Answer:**Zymase *Able to explain how the enzyme act.* **Answer:** P1: Zymase enzymes found in yeast. P2: It acts on starch and convert it into glucose P3: It acts on glucose and convert it into alcohol P4: through fermentation process **(any two)**	1 1 1 1 1	1 + 2 max 3
	TOTAL	**12**	

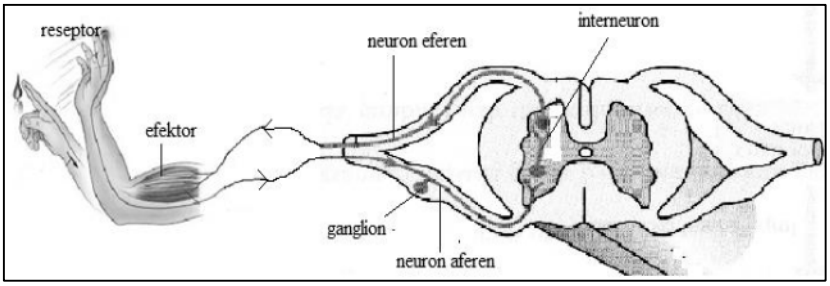
NUM	SCORING CRITERIA	MARKS	
3(a)(i)	Able to name the substance X Answer:water	1	1
3(a)(ii)	Able to explain what happen to substance X during light reaction in photosynthesis process. Suggested answer: F: photolysis of water P1: light energy is used to split the water molecules P2: into hydrogen ion (H^+) and hydroxyl ion (OH^-)	 1 1 1	 3
3(b)	Able to state in what stage gas Q and Gas T used and released Answer: Gas Q: dark reaction Gas T : light reaction	 1 1	 2

3(c)	Able to explain what will happen if the consumption of gas Q and production of gas T are at the same rate Suggested answer: F : no net gain or loss of the sugar produced P1: at compensation point P2: at low light intensity, the rate of carbon dioxide production during respiration is equal to the rate of carbon dioxide consumption during photosynthesis // explanation on oxygen P3: a point is reached whereby **<u>all</u>** the carbon dioxide is produced during respiration are used in photosynthesis P4: there is no net gain or loss in carbon dioxide by the plant	 1 1 1 1	 Max 3
3(d)	Able to state three importance of photosynthesis to living organism. Suggested answer: P1: remove carbon dioxide from the atmosphere P2: provide food for plant and animals in the form of carbohydrates or sugar or glucose P3: uses oxygen as a waste product which is released into the atmosphere P4: changes the energy from the sun into a usable form for living organism P5: provides the structural components in the cell walls of plants which is cellulose	 1 1 1 1 1	 Max 3
	Total		**12**

NUM	Scoring Criteria	Marks	
4(a)	Able to name tissue R and joint S correctly Answer: Tissue R : tendon Joint S : ball and socket joint	 1 1	 2
4(b)	Able to explain the role of muscle X, Y and R muscles straighten the arm in action Answer: P1 : Muscle Y / triceps contract while muscle X / biceps relax P2 : Muscle X and Y muscles act in pairs and opposite ways// antagonist P3 : Transferring force to the tendon / tissue R P4: (Tendon that is not elastic) bone interesting ulna / lead hand straightened	 1 1 1 1	 Max 3

4(c)(i)	Able to propose effective measures so as bone fracture heal faster and correctly explain Suggested answer: P1: radius cannot pulled the arm upward P2: Biceps / X muscle contract P3: (pulling) force (from biceps/ X) is transmitted to tendon / R P4: tendon /R cannot transmitted the force to radius	 1 1 1 1	 Max 3
4(c)(ii)	Able toexplain the way to overcome the problem osteoporosis Answer : P1: Intake of food that contain high calcium / any suitable example of food P2: Reguarly weight bearing exercise / any suitable example of weight bearing exercise	 1 1	 2
4(d)	Able to explain the importance of the human skeletal system properly Answer : P1 : Provides muscle attachments that act antagonistic pairs of muscles to produce movement P2 : Provides for the production of blood cells (in bone marrow) P3 : Provides for the ligaments to bone tissue can be connected to other bones to movement P4 : Provides for the joint to facilitate the movement P5 : Provides for tendon tissue so that the ends can be connected to the bones muscles for movement	 1 1 1 1 1	 Max 2
	Total		**12**

NUM	Scoring Criteria	Marks	
5(a)	Able to name type of actions Answer: Diagram 5.1 (a) : Voluntary action Diagram 5.1 (b) : Involuntary action // Reflex action	 1 1	 2
5(b)(i)		1	1

<table>
<tr><td>5(b)(ii)</td><td> 

Nama Neuron
Arah</td><td>1
1</td><td>2</td></tr>
<tr><td>5(c)</td><td>Able to state the similarity and differences between the actions

Suggested answer:
Similarity: - Both actions occur due to stimulus
- Involve three neurones

Differences:
<table>
<tr><th>Diagram 5.1(a)</th><th>Diagram 5.1(b)</th></tr>
<tr><td>The centre is in the cerebrum</td><td>The centre is in the spinal cord</td></tr>
<tr><td>Response under consious</td><td>Automatic response</td></tr>
</table></td><td>1
1

1

1</td><td>1+1</td></tr>
<tr><td>5(d)</td><td>State the importance of both actions

Suggested answer:
Diagram 5.1(a): Able to control the response by will / consious
Diagram 5.1(b): To avoid injuries</td><td>1
1</td><td>2</td></tr>
<tr><td>5(e)</td><td>Able to state three symptoms of Parkinson

Suggested answer:
P1: Weak muscles and shivering limbs (legs and arms)
P2: Unable to control body balanceand coordination
P3: Weak brain and unabe to function efficiently</td><td>1
1
1</td><td>3</td></tr>
<tr><td></td><td>Total</td><td></td><td>12</td></tr>
</table>

PAPER 2: SECTION B

Num	Scoring Criteria	Marks	
6(a)	Able to describe why individual M noticed the change in rate of respiration and the heart beats after completing a vigorous exercise Suggested answer: P1: during vigorous activity, the rate of respiration increase P2: because muscle cell needs more oxygen and glucose to release more energy during cellular respiration P3: result the oxygen concentration decrease but carbon dioxide concentration increase P4: the breathing rate increase to inflate the lungs with more oxygen/to deflate the lungs to release more more carbon dioxide P5: the heart beats increase to pump more blood with oxygen and glucose into blood circulation	 1 1 1 1 1	 max 4
(b)	Able explain the rate of respiration of a climbers while in deep of sea water. Suggested answer: F: the rate of respiration increase E1: because in deep of sea water, partial pressure of oxygen is low E2: detected by peripheral chemoreceptor/aortic bodies/ carotid bodies E3: triggers impulses and send to the heart muscle E4: cause heart beat increase E5: impulses also is send to the diaphragm / intercostals muscle E6: cause contraction/ relaxation of diaphragm/ intercostals muscle increase E7: the breathing rate/ the ventilation rate increase	 1 1 1 1 1 1 1 1	 max 6
(c)	Able to describe how homeostatic mechanism in her body function to overcome the situation shows in diagram before she was saved by fireman. Suggested answer (Student may answer either one) F: During a woman trapped in burning house, concentration of carbon dioxide increase / temperature increase. **1. Carbon dioxide concentration regulation** P1: during inhalation, more carbon dioxide enter to lung P2: cause partial pressure/ concentration of carbon dioxide increase in blood P3: pH in blood drop/ blood become acidic	 1 1 1 1	 1

	P4: detected by central chemoreceptor/ medulla oblongata **and** peripheral chemoreceptor/aortic bodies/ carotid bodies	1	
	P5: and triggers impulse	1	
	P6: impulses send to the diaphragm and intercostals muscle	1	
	P7: breathing rate increase	1	
	P8: and ventilation rate increase	1	max
	P9: partial pressure/ concentration of carbon dioxide back to normal	1	9
	or		or
	2. Temperature regulation		
	P1: high temperature is <u>detect</u> by (hot) receptor in the skin	1	
	P2: receptor <u>trigger</u> impulse and afferent neuron carry impulse to hypothalamus/thermoregulatory centre	1	
	P3: hypothalamus send the impulse through efferent neuron to (several different) <u>effectors</u>	1	
	P4: impulse stimulate skin to increase lost of heat	1	
	P5: <u>hair erector muscles</u> are stimulated to relax cause hair become lay flat	1	
	P6: thin layer of air is trapped cause more heat loss (by conduction and radiation)	1	
	P7: <u>blood capillary</u>/ arteriole relax/ vasodilation	1	
	P8: more blood flows close to the body surface cause more heat loss (by conduction and radiation)	1	max
	P9:<u>sweat gland</u> active cause more sweat produced	1	9
	P10: rate of evaporation very high	1	
	TOTAL		**20**

NUM	SCORING CRITERIA	MARKS	
7(a)(i)	*Able to name hormones P,Q, R and S with role*		
	Answer:		
	P1: Hormone**FSH (P) and LH(Q)**secreted by pituitary gland control the differents in ovary	1	
	P2: Hormone **estrogen (R) and progesterone (S)**secreted by ovary control the different in uterus	1	
	P3: **FSH**stimulate development of follicle in ovary	1	
	P4: Primary Oocyte develop and become secondary oocyte	1	
	P5: **LH** stimulate ovulation	1	
	P6: Graafian follicle releases secondary oocyte	1	
	P7: **Estrogen**repair endometrium wall after menstruation	1	
	P8: inhibit production of FSH and stimulate secretion of LH	1	
	P9: **Progesterone** stimulate thickenedthe endometrium wall for implantation of embryo	1	Max 6
	P10: Inhibit production of FSH and LH (by pituitary gland)	1	

7(a)(ii)	*Able to explain three events X,Y and Z that occur in the ovary which effected by the hormonal **levels** in the regulation of menstrual cycle.* ***Answer:*** F1: **X is follicle development (day 6 to 14)** P1: Primary follicle in the ovary develop into Graafian follicle which is stimulate by FSH P2: Primary oocyte (in the primary follicle) will develop and become secondary oocyte (in Graafian follicle) P3: Development of follicle in the ovary stimule the secretion of estrogen //Follicle cells and secondary oocyte secretes estrogen P4: Estrogen helps to repair endometrium wall after menstruation P5: When the concentration of estrogen started to increase , production of FSH started to decrease P6: development of follicle stopped P7: When the concentration of estrogen is high enough, its stimulate the production of LH by pituitary gland / and inhibit production of FSH F2: **Y is ovulation (day 14)** P8: stimulate by high level of LH P9: stimulate Graafian follicle to release secondary oocyte into fallopian tube P10: After ovulation, Graafian follicle become corpus luteum F3: **Z is corpus luteum stage (day 15 to 28)** P11: Corpus luteum secrete progesterone continously . P12: Progesterone stimulate formation of more endometrium tissues and blood capilaries P13: to increase / continue the thickness of endometrium for implantation of embryo P14: If fertilisation occurs, corpus luteum remain and continue secretes progesteron P15: that maintain the thickness of endometrium wall. P16: Progesterone inhibit secretion of FSH and LH by pituitary gland // prevents ovulation and development of another follicle during pregnancy P17: If fertilisation does not occur, corpus luteum degenerate and level of progesterone decrease . P18: Endometrium wall breakdown and excrete from the body as menstruation (during first day of menstrual cycle). **Any 1P from any F**	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Max 10

7(b)	*Able to explain what will happened if no menstrual cycle in woman* F1: No fertilisation occur in fallopian tube P1: Secondary oocyte is not fertilised P2: Secondary oocyte is not release from ovary into fallopian tube P3: Ovulationdoes not take place F2: No pregnancy P4: due to the zygote failed to implant in the uterus P5: Endometrium will not thickened and development of more blood capilaries does not take place F3: No menstruation P6: Endometrium wall does not breakdown P7: Secretion of hormones FSH / LH / estrogen are not stimulated to produce	1 1 1 1 1 1 1 1 1 1	max 4
	TOTAL MARKS	**20 M**	

<table>
<tr><th>Num</th><th>Scoring Criteria</th><th colspan="2">Marks</th></tr>
<tr><td>8(a)(i)</td><td>Explain the formation of the offspring in F2 generation

Fenotip F1 x F1 : Biji bulat, warna kuning X Biji bulat, warna kuning

Genotip F1 x F1 : BbKk BbKk
Meiosis :
Gamet : BK Bk bK bk BK Bk bK bk

Persenyawaan rawak :
Genotip F2 :
<table><tr><th>Gamet</th><th>BK</th><th>Bk</th><th>bK</th><th>bk</th></tr><tr><td>BK</td><td>BBKK</td><td>BBKk</td><td>BbKK</td><td>BbKk</td></tr><tr><td>Bk</td><td>BBKk</td><td>BBkk</td><td>BbKk</td><td>Bbkk</td></tr><tr><td>bK</td><td>BbKK</td><td>BbKk</td><td>bbKK</td><td>bbKk</td></tr><tr><td>bk</td><td>BbKk</td><td>Bbkk</td><td>bbKk</td><td>bbkk</td></tr></table>
Fenotip F2: Biji bulat, warna kuning | Biji bulat, warna hijau | Biji kedut, warna kuning | Biji kedut, warna hijau

Nisbah fenotip F2 : 9 : 3 : 3 : 1

P6: Both parents from F1 generation are heterozigot
P7: Both parents undergo meiosis to produce 4 types of gamete (which are BK, Bk, bK and bk)
P8: Gametes from different individu undergo random fertilisation
P9: and produce 9 offspring with both dominant traits, 3 offspring with one dominant and one recessive trait and another 1 offspring with both recessive traits.</td><td>1

1

1

1

1

1
1

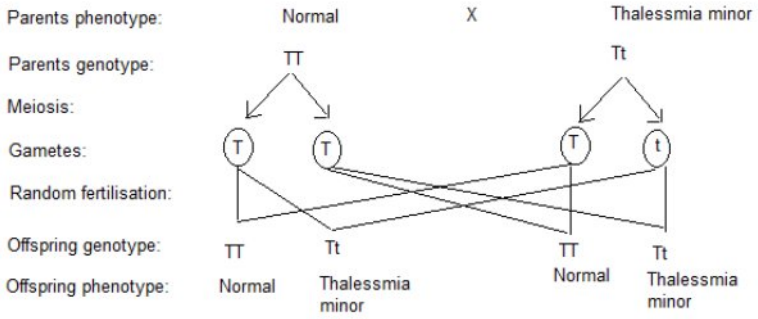
1
1</td><td>max 8</td></tr>
<tr><td>8(a)(ii)</td><td>Able to state what is Second Mendel’s Law based on (a)(i)

Suggested answer:
F: Second Mendel’s Law // Law of Independent Assortment
P: Each allele from one pair is free to pair up with other allele from another pair // randomly</td><td>1
1</td><td>2</td></tr>
<tr><td>8(b)(i)</td><td>Able to differentiate thalassemia majo and thalassemia minor

Suggested answer:

<table><tr><th>Thalassemia major</th><th>Thalassemia minor</th></tr><tr><td>Have homozygote recesssive alleles, tt // two recessive alleles</td><td>Have heterozygote allele, Tt // only one recessive allele</td></tr><tr><td>Individual shows the symptoms such as jaundis, problem with liver and spleen, accute anaemia</td><td>Individual is a carrier and does not show any symptoms</td></tr></table></td><td>1

1</td><td>2</td></tr>
</table>

	Able to state how to detect thalessmia minor Suggested answer: F: Blood test // Ujian saringan talasemia P1: detect the shape of red blood cells which abnormal / too small P2: percentage of haemoglobin in blood is too low	 1 1 1	 Max 2
8(b)(ii)	Able to give advice to Ahmad in making his best decision Suggested answer: If married with Farhana: P1:  P2: the probability to inherit the thalassemia allele to the offspring is 50% P3: if the thalassemia minor / Tt offspring married another thalassemia minor / Tt P4: there will produce a thalassemia major /TT If married with Zulaikha: P5: the probability to inherit thalassemia allele is 0% P6: because both parents do not have the recessive allele (of thalassemia) Conclusion (K): Ahmad is adviced to choose Zulaikha to prevent the inheritation of the recessive allele (of thalasemia)	 1 1 1 1 1 1	 Max 6
	Total		**20**

Num	Scoring criteria	Marks	
9(a)	**Able to explain the importance of the main nutrient for teenagers and elders** (i) Teenagers P1 need food which are rich in carbohydrate P2 to provide energy for active lifestyle P3 need a lot of protein P4 for rapid growth P5 need a lot of calcium P6 for bones n tissues formation	 1 1 1 1 1 1	

	P7 need a lot of vitamin D P8 to help in absorption of calcium and phosphorous P9 need a lot of vitamin E P10 to prevent damaged of phospholipid in cell membrane P11 should consume food rich in ferum P12 to synthesis more haemoglobin after menstruation/prevent iron deficiency/anemia (ii) The Aged P1 need a lot of protein P2 for repairing damage tissue P3 need a lot of calcium P4 to strengthen the bones/prevent osteoporosis P5 need a lot of vitamin D P6 to prevent osteomalacia P7 need a lot of folic acid P8 helps synthesise red blood cells P9 need a lot of vitamin C P10 to help the strong immune system/collagen synthesis for bones and cartilage	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**max 5** **max 5**
9(b)	**Able to explain the effect of malnutrition and suggest the way to overcome health problem of each individual.** Diagram 9.1 F1 obesity P1 condition where a person's body weight exceeds 20% the normal weight P2 excessive consumption of carbohydrate and lipid P3 excess carbohydrates and lipids in the diet are converted into body fat/cholesterol P4 causes them to face a higher risk for cardiovascular disease/hypertension/diabetes mellitus P5 can be overcome by practicing a balanced diet P6 eating not more than what is required by the body Diagram 9.2 F2 Anorexia nervosa P1 condition where a person experience an intense fear of gaining weight/recognized as a physiological disorder P2 the weight of individual with anorexia nervosa is 15% or more below the normal body weight P3 deprive themselves from eating which leads them to experience severe lost of body weight P4 tissue repair cannot take place due to lack of protein P5 leads to hormone imbalance, liver diseases and cardiovascular problems P6 will experience dehydration and can cause irregular periods	 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**max 5**

	P7 early treatment through nutrition and gradual restoration of body mass P8 counseling is also needed to help the patient to overcome their emotional distress	1 1	**max 5**
	Total	**20**	