

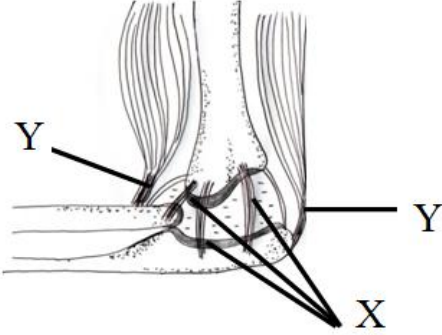
SKEMA PEMARKAHAN **BAHAGIAN A** KERTAS 2 MODUL 2 2015 MPSM KEDAH

QUESTION NO.			MARKING CRITERIA	SUB MARKS	TOTAL MARKS										
1	(a)	(i)	Contractile vacuole	1	1 mark										
		(ii)	P1: Pond water is hypotonic P2: Water diffuse into X P3: by osmosis P4: X cannot / fail to contract P5: X cannot expel excess water P6: Amoeba sp will burst P7: Amoeba sp will die Any three P's	1 1 1 1 1 1 1	3 marks										
	(b)	(i)	<table border="1"> <tr> <td>Amoeba sp</td> <td>Multicellular organism</td> </tr> <tr> <td>P1: TSA/V is high</td> <td>P1: TSA/V is low</td> </tr> <tr> <td>P2: does not involve any organ</td> <td>P2: involve organ, ex: lung</td> </tr> <tr> <td>P3: diffusion of oxygen and carbon dioxide directly across plasma membrane // direct exchange</td> <td>P3: diffusion of oxygen and carbon dioxide involving blood capillaries and alveoli</td> </tr> <tr> <td>P4: process involved is simple diffusion</td> <td>P4: process involved is breathing, involving inhalation and exhalation / breathing mechanism.</td> </tr> </table> <p>Note: Accept explanation of respiratory system in fish / frog /grasshopper. (Any suitable mark scheme)</p>	Amoeba sp	Multicellular organism	P1: TSA/V is high	P1: TSA/V is low	P2: does not involve any organ	P2: involve organ, ex: lung	P3: diffusion of oxygen and carbon dioxide directly across plasma membrane // direct exchange	P3: diffusion of oxygen and carbon dioxide involving blood capillaries and alveoli	P4: process involved is simple diffusion	P4: process involved is breathing, involving inhalation and exhalation / breathing mechanism.	1 1 1 1	3 marks
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	(c)	(l)	P1: Location A has low light intensity compared to Location B P2: Amoeba response to adverse stimuli, which is high light intensity P3: More Amoeba live in dark/low light intensity area [Any 2]	1 1 1	2 marks										
			P1: The pH / temperature of the water will change P2: lead to water pollution P3: Habitat / River are unfavorable for growth of Amoeba sp. P4: Amoeba sp. will die P5: Amoeba sp. population decrease [Any 3]	1 1 1 1 1	3 marks										
TOTAL					12										

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS																
2	(a)	(i)	<p>Able to state the type of transport</p> <p>Answer : P : simple diffusion Q : facilitated diffusion</p>	1 1	2 marks																
		(ii)	<p>Able to give one particle move through Q and R</p> <p>Answer : Q : sodium / potassium ions / any suitable example R : glucose / amino acid / any suitable example</p>	1 1	2 marks																
		(iii)	<p>Able to compare the transport process involving particles Q and R</p> <p>Answer :</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Process at Q</th> <th style="width: 50%;">Process at R</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;">Similarities</td> </tr> <tr> <td colspan="2">P1. Both process involving the structural protein / carrier protein / channel protein</td> </tr> <tr> <td colspan="2">P2: Both process involving the movement of substances.</td> </tr> <tr> <td colspan="2" style="text-align: center;">Differences</td> </tr> <tr> <td>P3. (Molecule) move follow the concentration gradient</td> <td>(Ion) move against concentration gradient</td> </tr> <tr> <td>P4. Do not need energy / ATP</td> <td>Need energy / ATP</td> </tr> <tr> <td>P5. The process continue until equilibrium achieve</td> <td>The process end with the accumulation or secretion of particles</td> </tr> </tbody> </table> <p style="text-align: right;">[Any 3 P's</p>	Process at Q	Process at R	Similarities		P1. Both process involving the structural protein / carrier protein / channel protein		P2: Both process involving the movement of substances.		Differences		P3. (Molecule) move follow the concentration gradient	(Ion) move against concentration gradient	P4. Do not need energy / ATP	Need energy / ATP	P5. The process continue until equilibrium achieve	The process end with the accumulation or secretion of particles	1 1 1 1 1	Any 3 marks
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	(b)		<p>Able to explain what happen to the uptake of potassium ion in the presence of cyanide</p> <p>Answer : P1 : cyanide halts/stops aerobic respiration P2 : glucose cannot be oxidized P3 : No ATP/energy is produced P4 : Since active transport needs ATP/ energy P5 : the intake of potassium ion / substances by active transport also stopped</p> <p style="text-align: right;">[Any 3 P's]</p>	1 1 1 1 1	3 marks																

	(c)	Able to explain how food can last longer Answer : P1 : Concentrated salt solution is hypertonic to the squid cells//squid cell is hypotonic to the concentration of salt solution P2 : Water diffuse out of the cell into the solution by osmosis P3 : Microorganism cannot live / breed / dehydrated in the squid, thus food is preserved [Any 2 P's]	1 1 1	2 marks
		TOTAL		12

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS														
3	(a)	(i)	P : alveolus Q : gills	1 1	2														
		(ii)	F 1 : Human lung has many alveoli and the gills of a fish composed filament and lamellae P1 : to increase the surface area for gaseous exchange F2 : Alveoli and the gill filament have thin membrane. P2: for rapid diffusion of respiratory gases F3 : The gill filament and alveoli have rich supply of blood capillaries P3 : To transport the respiratory gases efficiently	1 1 1 1 1	Terima P jika ada F yang sepadan. Terima F tanpa P 4 marks														
	(b)		F1: The partial pressure of oxygen in the alveolus is higher compared to the partial pressure in blood capillaries. P1: Therefore, oxygen diffuse into the blood capillaries P2: (by) simple diffusion OR F2: The partial pressure of carbon dioxide in the blood capillaries is higher compared to the partial pressure in alveolus P3: Therefore, carbon dioxide diffuse into the alveolus by simple diffusion [Any F1 + P1 or F2 + P2]	1 1 1 OR 1 1	2 marks														
	(c)		P1: Breathing rate during vigorous activity is higher P2: to supply more oxygen to muscle cell . P3: To carried out cellular respiration/oxidation of glucose P4: To release more energy Any 2 P's	1 1 1 1	2 marks														
	(d)		<table border="1"> <thead> <tr> <th>Chemical compound</th> <th>Effect</th> </tr> </thead> <tbody> <tr> <td>P1: Tar</td> <td>Deposits in lung and cause persistent cough and shortness of breath</td> </tr> <tr> <td>P2: Nikotin</td> <td>Restricted the blood vessel cause high blood pressure</td> </tr> <tr> <td>P3: 3,4 – benzo pyrena</td> <td>Carcinogenic substances cause lung cancer</td> </tr> <tr> <td>P4: Carbon monoxide</td> <td>Reduce oxygen supply in the body cell</td> </tr> <tr> <td>P5: Oxide of nitrogen</td> <td>Inflammation in lung</td> </tr> <tr> <td colspan="2">P6: Any suitable example and effect.</td> </tr> </tbody> </table>	Chemical compound	Effect	P1: Tar	Deposits in lung and cause persistent cough and shortness of breath	P2: Nikotin	Restricted the blood vessel cause high blood pressure	P3: 3,4 – benzo pyrena	Carcinogenic substances cause lung cancer	P4: Carbon monoxide	Reduce oxygen supply in the body cell	P5: Oxide of nitrogen	Inflammation in lung	P6: Any suitable example and effect.		1+1 1+1 1+1 1+1 1+1 1+1	2 marks
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			Any pair of P (1+1)																
			TOTAL:		12 Marks														

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS
4	(a)	(i)	<i>Able to name the tissues:</i> X : ligament Y : tendon	1 1	2 marks
		(ii)	<i>Able to label tissue X and Y on diagram correctly</i>  Any one X and one Y labelled correct	1 1	2 marks
		(iii)	<i>Able to explain why possible to apply ice to reduce pain :</i> P1:(ice) decrease tissues temperature P2: provides vasoconstriction //narrow the blood vessels P3: decrease / slow down the blood flows to the affected area P4: reduce fluid building in the affected area P5:(ice) numbs the area (can reducing pain) P6: create a soothing feeling to the inflammation// heat increase inflammation P7:low temperature reduce nerve conduction velocity //lowering the speed of impulses P8: low temperature reduce tissue metabolism // oedema [Any 2 P's]	1 1 1 1 1 1 1 1	2 marks
	(b)	(i)	<i>Able to identify the fracture bone</i> Fibula	1	1 mark
		(ii)	<i>Able to explain why the cast is use to treat fracture leg</i> P1: to immobilize / realign bone P2: prevent affected bone from moving / to prevent further injury. P3: bone cells / tissues then build / grow new bone cells /tissues // repair / connect the fracture / broken bone P4: artificial bone is used to replace severely damaged / discard bone [Any 3 P's]	1 1 1 1	3 marks
		(iii)	<i>Able to suggest the diet that should consumed by patient</i> P1: food rich in calcium to increase bone mass. P2: calcium is important in the formation of bone mass. P3: high with Vitamin D to increase reabsorption of calcium [Any two]	1 1 1	2 Marks
TOTAL :				12 Marks	

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS	
5	(a)	(i)	neurone X : afferent neurone//sensory neurone	1	2 marks	
			Neurone Y : efferent neurone//motor neurone	1		
		ii.	P1: Reseptor detects the stimulus	1	3 marks	
			P2: Stimulated to trigger nerve impulse in afferent neurone	1		
			P3: The nerve impulses are carried by the afferent neurone to the central nervous system/brain /send to interneurone	1		
			P4: Central nerves system integrate and interpret the information	1		
			P5: trigger / send new nerve impulses	1		
			P6: Carried by the efferent neurone to the effectors	1		
			[Any 3 P'S]			
		(b)	(i)	P1: gap T is synapse		3 marks
			P2: A nerves impulses arrives at a synaptic knob of the axon terminal	1		
			P3: The nerve impulse stimulates the vesicles to release neurotransmitters	1		
			P4: The neurotransmitter (molecules) diffuse across the synapse to the dendrites of the subsequent / adjacent neurone.	1		
			P5: The dendrites is stimulated to then trigger the new impulse	1		
	P5:The new impulses then travels along the neurone to another neurone or effector		1			
			[Any 3 P'S]			
	(ii)	P1: Suffer from Alzheimer's disease	1	2 marks		
		P2: Lack of acetylcholine in the brain	1			
		P3: Caused loss of memory // lack of concentration/	1			
		P4: Confusion / poor judgment / loss ability to speak / read / write	1			
			[Any 2 P'S]			
	(c)	P1: Increase the heart beat	1	2 marks		
		P2: Increase breathing rate	1			
		P3: Increase blood pressure	1			
		P4: transport more glucose and oxygen to muscle.	1			
		P5: Increase the metabolic rate / rate of cellular respiration.	1			
		P6: produce more energy	1			
		[Any 2 P'S]				
TOTAL					12 Marks	

SKEMA PEMARKAHAN **BAHAGIAN B** KERTAS 2 MODUL 2 2015

No	Marking Criteria	Marks	Total Marks
6	<p>(a) <u>Explanation:</u></p> <p>F1 : Mr X has (no Hepatitis A antigen and) no antibodies against Hepatitis B</p> <p>E1 : Mr X is not infected by the virus / has never got infected by the disease</p> <p>F2 : Mr Y has (no Hepatitis B antigen but has) antibodies against Hepatitis B.</p> <p>E2 : Mr Y had been infected with undergone the disease and recovered / Mr Y has been vaccinated against Hepatitis B</p> <p>E3 : Therefore, Mr Y 's immune system has produced antibodies against the disease</p> <p><u>Discussion:</u></p> <p>F1 : Mr Y's level of antibody against Hepatitis B in the blood is above the immunity level</p> <p>E1 : Mr Y does not need to be immunised because he has acquired natural active immunity / artificial active immunity</p> <p>E2 : Thus, Mr Y has immunity against future Hepatitis B infections</p> <p>F2 : Mr X does not have any antibody, so need to be immunised against the disease by vaccination.</p> <p>F3 : The vaccine stimulates the immune system of Mr X to produce antibodies against the Hepatitis B virus.</p> <p>E3 : Mr X acquires artificial active immunity against Hepatitis B</p> <p style="text-align: right;">[Any 10]</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>10 Marks</p>

(b)	<p><u>P:</u></p> <p>P1 - The second line of defence 1</p> <p>P2 - The white blood cell in P is a phagocyte. 1</p> <p>P3 - The two main types of a phagocyte are the neutrophils and monocytes 1</p> <p>P4 - Monocytes can enlarge and develop into microphages 1</p> <p>P5 - Phagocytes carry out phagocytosis / a process of engulfing and ingesting microorganisms or other substances such as cellular debris 1</p> <p>P6 -When a phagocyte encounters an invading pathogen, the phagocyte engulfs the organism 1</p> <p>P7 - After the organism is engulfed and drawn inside the phagocyte, lysozyme digest the pathogen 1</p> <p><u>Q:</u></p> <p>P8 - The third line of defence 1</p> <p>P9 - The white blood cells in Q are lymphocytes 1</p> <p>P10 - The outer surface of an invading microorganism contains antigens which the immune system recognizes as foreign or non-self 1</p> <p>P11 - The antigens induce the lymphocytes to produce specific antibodies 1</p> <p>P12 - Each antibody molecule has an antigen-binding site that is highly specific and can only bind to a specific antigen 1</p> <p>P13 - After binding to the antigen molecule, the antibody clumps the pathogens together. 1</p> <p>P14 - The clumping makes the pathogens easy targets for phagocytes to capture and destroy 1</p> <p style="text-align: right;">[Any 10]</p>		10 marks
	TOTAL		20 MARKS

No	Marking Criteria	Marks	Total Marks
7(a)	(i) <p>P1 - Proses meiosis menyebabkan bilangan kromosom dalam gamet menjadi haploid</p> <p>P2 - Pindah silang yang berlaku semasa profasa 1 meiosis</p> <p>P3 - Penyusunan rawak kromosom homolog pada peringkat metafasa I meiosis</p> <p>P4 - Pemisahan kromatid semasa anafasa II meiosis</p> <p>P5 - Menghasilkan pelbagai jenis gamet dengan kandungan genetik yang berbeza</p> <p>P6 - Persenyawaan secara rawak menghasilkan zigot yang mempunyai maklumat genetik yang berbeza daripada induknya</p> <p>P7 - Gen yang diturunkan dari induk kepada anak-anak terdiri daripada gen dominan dan gen resesif</p> <p>P8 - Gen dominan akan menunjukkan ciri-cirinya, tetapi gen resesif tidak ditonjolkan</p> <p>P9 - Hanya separuh daripada bilangan kromosom daripada ibu akan diturunkan kepada anak dan separuh daripada bilangan kromosom daripada bapa untuk menghasilkan individu baru // persenyawaan secara rawak antara gamet menghasilkan individu baru</p> <p>P10 - Mutasi gen / mutasi kromosom boleh menghasilkan individu dengan trait yang berbeza</p> <p style="text-align: right;">[mana-mana 6]</p>	1 1 1 1 1 1 1 1 1 1	6 markah
	(ii) <p>P1 Menggunakan cap jari, cap jari kembar seiras adalah tidak sama</p> <p>P2 disebabkan oleh faktor persekitaran</p> <p>P3 menggunakan ujian genetic</p> <p>P4 melalui ujian DNA</p> <p>P5 99 % adalah tepat</p> <p style="text-align: right;">[Mana-mana 4]</p>	1 1 1 1 1	4 Markah
(b)	<p>F: Anemia sel sabit</p> <p>P1 Penyakit ini adalah penyakit pewarisan / diwarisi dari ibu bapa</p> <p>P2 Mewarisi alel resesif daripada kedua-dua ibu dan bapa</p> <p>P3 Penyakit ini berlaku disebabkan oleh mutasi gen</p> <p>P4 Mutasi gen berlaku semasa pembentukan gamet</p>	1 1 1 1 1	

No	Marking Criteria	Marks	Total Marks
	P5 - Susunan DNA berubah P6 - Penyusunan amino asid, berubah Glutamic asid telah diganti dengan Valine P7 - Menyebabkan bentuk sel darah merah berubah P8 - Sel darah merah berbentuk bulan sabit terhasil P9 - Mempunyai jumlah luas permukaan yang kecil. P10: Kadar pertukaran gas lebih rendah. P11: Kandungan haemoglobin juga kurang berbanding dengan sel darah merah yang normal. P12: Keadaan ini menyebabkan pengangkutan oksigen berkurang. P13- Menyebabkan pesakit mudah letih/pucat /lemah [Mana-mana 10]	1 1 1 1 1 1 1 1 1	10 Marks
	Total:	20 Marks	

8(a)	(i)			
		P1 – only mature trees are removed. P2 – Reforestation // large scale replanting of trees. P3 – establishing forest reserve P4 – to maintain the equilibrium of the ecosystem P5 – law of forest enforcement continuously P6 – maximise recycle campaign. P7 – plant quick growing and deep-rooted trees to prevent soil erosion. [Any 4]	1 1 1 1 1 1 1	4 Marks
	(ii)	P1 – to obtain timber for construction P2 - to obtain wood for producing paper and other wood products. P3 – wood for cooking and heating purposes P4 – to clear land for agricultural, such as planting crops and grazing livestock. P5 – for mining of mineral such as tin and iron. P6 – for urbanisation // building of roads and buildings. P7 – to build dam for water reservoir. P8 – to build hydroelectric power station. P9 – to build recreation park. [Any 6]	1 1 1 1 1 1 1 1 1	6 Marks

No	Marking Criteria	Marks	Total Marks
8	(b) F1 – CFC Free is used to reduce ozone depletion. P1 – the destruction of the ozone layer is mainly due to increasing levels of CFC (Chlorofluorocarbons) in the atmosphere. P2 – ozone layer absorb ultraviolet (UV) radiation P4 – and shield organisms from its damaging effects // mutation // skin cancer // reduce immune system of animals and humans. P5 – CFCs are used as coolants in air conditioners and refrigerator // propellants in aerosol cans // foaming agents in the making of Styrofoam packaging. P6 – CFCs are currently being replaced by HFC. P7 – HFC do not break down ozone molecule P8 – or replaced by HCFCs which has a low ozone breakdown. F2 – hybrid car using both conventional petrol engine and electric generators. P9 – it reduce emission of greenhouse gases / CO ₂ . P10 – example: carbon dioxide (CO ₂)// nitrous oxide (N ₂ O). P11 – an increase of carbon dioxide concentration in the atmosphere leads to greenhouse effect. P12 – also cause global warming // the Earth's average temperature rises // melting of polar ice caps // causing sea levels to rise // flooded in low land area // drought // risk to human health such as heat related illness. P13 – use unleaded petrol is to reduce emission of lead from motor vehicles P14 – lead is an air pollutant which may leads to brain damage // kidney and digestive problems. [Any 10]	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
		Total	20 Marks

No	Marking Criteria	Marks	Total Marks
9(a)(i)	<p>Able to explain the consequences of having obesity</p> <p>Sample Answers P1 : The blood may contains high cholesterol level / glucose level P2 : Leads to high blood pressure/ hypertension (in adulthood) P3 : High possibility to suffer from diabetes (in adulthood) P4 : Have low self-esteem/ inactive lifestyle P5 : (due to) negative body image P6 : Leads to depression P7 : high risk of getting cardiovascular disease/ heart attack/ angina P8 : earlier death (in adulthood)</p> <p style="text-align: right;">Any 4 Ps</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	4 marks
9(a)(ii)	<p>Able to suggest how to avoid the problems caused by obesity.</p> <p>Sample Answers P1 : Practise healthy eating habits P2 : Reduce high sugar/lipid level food // any suitable example of P1 P3 : Awareness / Education on the consequences of obesity P4 : Awareness campaign of ideal BMI among students // any suitable example of P3 P5 : exercise regularly jogging / jumping rope / swimming // any other suitable example of P5</p> <p>P6 : increase outdoor activities P7 : avoid watching TV / screening time for too long // any other suitable example of P7</p> <p style="text-align: right;">Any 6 Ps</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	6 marks
9(b)(i)	<p>Able to explain the graph presented by Thomas Robert Malthus.</p> <p>Sample Answers P1 : The population increases by exponentially P2 : The food production increases by arithmetically P3 : The food production fail to meet the demand from the population P4 : Leads to human conflict / drastic competition for food</p> <p style="text-align: right;">Any 2 Ps</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	2 marks

No	Marking Criteria	Marks	Total Marks
9(b)(ii)	<p>Able to explain why the prediction does not occur.</p> <p>Sample Answers</p> <p>P1 : controlled / decrease the growth rate of human population.</p> <p>P2 : any example of suitable technologies / approach in controlling the birth rate</p> <p>P3 : Increase the production of food</p> <p>P4 : Food technologies / any example 1</p> <p>P5 : Food technologies / any example 2</p> <p>P6 : Improve the irrigation system</p> <p>P7 : Introduce high quality fertilizers</p> <p>P8 : Improve the quality/resistance of the plants / livestock</p> <p>P9 : the technique used / cloning / GMF / transgenic</p> <p>P10 : re-planning the plantation / farming schedule.</p> <p>P11 : use of physical capital / machine</p> <p>P12 : change the eating habits / reduce the amount of food intake (for better health)</p> <p style="text-align: right;">Any 8 Ps</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p style="text-align: center;">8 marks</p>
	TOTAL:	20 Marks	