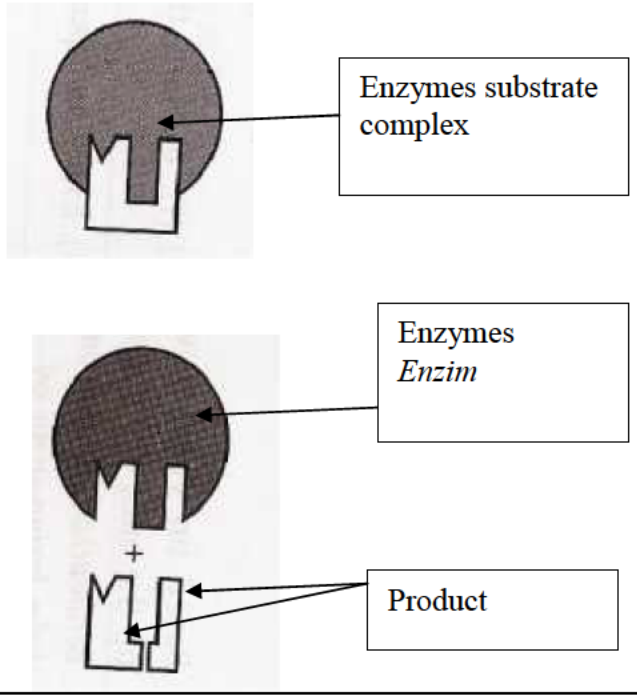
SKEMA PEMARKAHAN **BAHAGIAN A** KERTAS 2 MODUL 2 2014 MPSM KEDAH

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS
1	(a)	(i)	P: hair (shaft) S: sweat gland	1 1	2 marks
		(ii)	Cell specialisation	1	1 mark
		(iii)	- When Q/hair erector muscle relax,hair shaft lowers and lie flat against skin. - P/hair shaft trap less air, so warm air is not trapped against the skin and heat is lost to the surrounding. - R/sweat gland secrete sweat onto the surface of the skin to cool the body/heat lost to the surrounding	1 1 1	3 marks
	(b)	(i)	P1 - Wash face twice daily E1 - to remove impurities, dead skin cells, and extra oil from skin's surface. P2 - Avoid exposing skin without any sunblock /mosturiser /foundation E2 - because oil particles in the air can coat your skin and clog your pores P3 - Eat fruits and vegetables E3 - because these foods rich in vitamin A and E and good for healthy skin. o Any 2 pairs	1 1 1 1 1 1	4 marks
		(ii)	- Cause skin cancer - Due to UV light penetration	1 1	2 marks
			Total marks		12

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS
2	(a)	(i)	Able to name stage D Answer: Metaphase	1	1
		(ii)	Able to explain the chromosomal behaviour in stage D Answer P1 : The spindle fibre holds on the centromere of the chromosome. P2 : The chromosomes are arranged/ aligned at the equatorial plate/ metaphase plate	1 1	2
	(b)	(i)	Able to arrange the stage of mitosis process in correct sequence Answer : C, D, A, B	1	1
	(C)		Able to explain Answer P1 : cell division unregulated/ very fast P2 : form a mass of abnormal cells P3 : called tumour	1 1 1 Any 2	2
	(d)	(i)	Able to explain how callus is formed Answer P1 : the leaf cells divide by mitosis P2 : forming a group of cells P3 : in suitable pH/temperature	1 1 1 Any 2	2
		(ii)	Able to explain the characteristic of plant Answer P1 : New plants are genetically identical to the parent cell P2 : no change of genetic material P3 : have the same chromosomal number as the parent cell P4 : no reduction in the chromosomal number P5 : easily get disease//shorter life span P6 : have the same body resistance against disease	1 1 1 1 1 1 Any 2	2
	(e)		Able to explain the characteristic of cell in zone M Answer P1 : Zone M is the zone of cell division P2 : consists of meristimatic cell P3 : that divide actively/ continuously P4 : by mitosis	1 1 1 1 Any 2	2
			Total marks		12

QUESTION NO			MARKING CRITERIA	SUB MARKS	TOTAL MARKS
3.	(a)		Able to state level of organization of protein X : Tertiary Y : Quarternary	 1 1	 2 marks
	(b)		Able to give the example of tertiary structure – Enzymes//hormone//antibodies//plasma proteins any one	1	1 mark
	(c)		Able to state the role of haemoglobin • To Transport oxygen • Combine with the oxygen to formed oxyhaemoglobine • To get rid of carbon dioxide • Combine with carbon dioxide to formed carbaminohaemoglobine Any 2	 1 1 1 1	 2 marks
	(d)	(i)	Able to draw the schematic diagram 'key lock mechanism'  	 1 1	 2 marks
		(ii)	Able to name the substrate and the enzymes involve in the mechanism – Substrate : Lipid – Product : Fatty acid and glycerol	 1 2	 3 marks

	(c)		Able to sate the role of rennin and lipase in manufacturing of cheese - Rennin used to coagulated protein in milk - Lipase is used to ripening the cheese	 1 1	 2 marks
			Total marks		12 marks

4	(a)	(i)	X : Neural canal	1	2
			Y: Spinous process	1	
		(ii)	X : Provide the passage of spinal cord	1	2
			Y : Provides surface for the attachment of musles	1	
	(b)		A pair of vertebrarterial canals	1	2
			To allow the vertebrae to pass through to the brain	1	
	(c)		P1 Have two facet/articulating surfaces on the transverse process and the centrum P2 Forming point of the articulation for the rib // Attachment of rib to the transverse process/ thoracic vertebrae P3 Allow the rib to move upwards and downwards P4 Has long spinal process/neural spine for muscles attachment to the rib cage	1 1 1 1	3
	(d)		P1: Suffers from osteoarthritis P2: Z is a layer of cartilage P3: Cartilages degenerates / worn out and cause friction between the bone during movement P4 : Joint is painful and the patient having difficulties in movement . Any 3 P	1 1 1 1	3
					12

No.	Marking Scheme	Mark	
5. (a)	Oestrogen : to heal and repair the uterine wall / endometrium // to stop the pituitary gland to produce FSH Progesterone : to stimulate the growth and development of blood vessels in th endometrium / thicken the endometrium	1 1	2

(b)	P1 : oestrogen and progesterone to stop the pituitary gland to produce FSH
	// progesterone will stop pituitary gland to produce LH
	P2 : Without FSH, primary follicle will not able to develop become Graafian follicle.
	P3 : Without Graafian follicle, no ovulation will occur
	// without LH, no ovulation will occur
	P4 : No secondary oocyte will be released
	// No fertilization occur.
	Any 3 P
		1
		
		1
		
		1
		
		1
			3

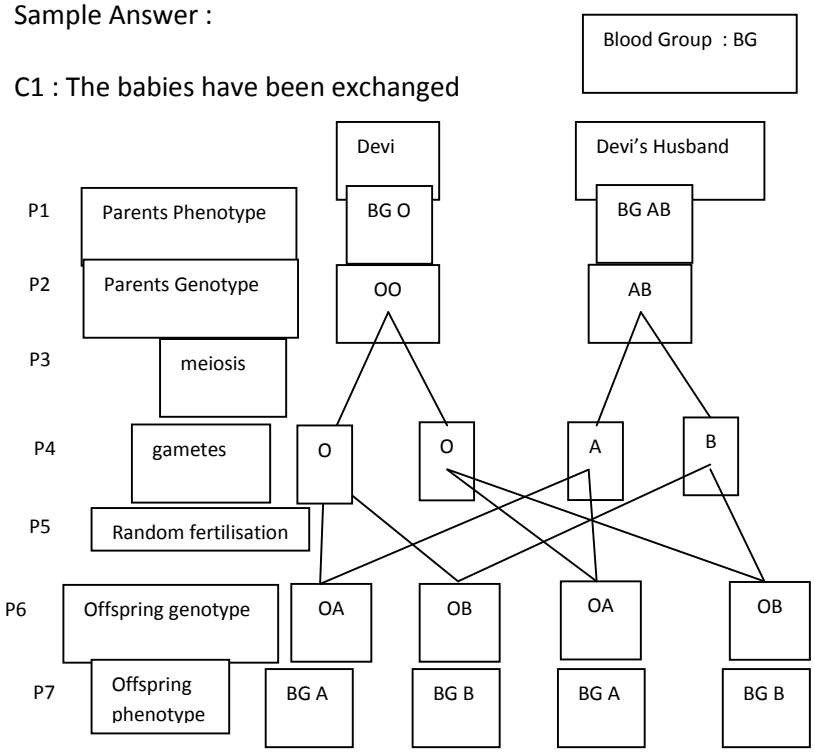
c)(i)	Double fertilization	1	1
(ii)	Embryo : P1 : one of the male gamete / sperm nucleus fuse with the egg cell P2 : to form zygote P3 : zygote will (divide by mitosis to) form embryo Any 2 P Endosperm : P4 : one of the male gamete / sperm nucleus fuse with the two polar nuclei P5 : to form a triploid nucleus P6 : triploid nucleus (divide by mitosis to) form endosperm Any 2 P	 1 1 1 1 1 1	4
(iii)	P1 : Tissue culture P2 : Can be produced in big number P3 : Can be produced at any time P4 : All the offspring have the same genetic materials P5 : All the offspring inherits the good traits from the parent Any 2 P	1 1 1 1 1	2
	Total		12

No			Marking Criteria	Marks	Total Marks
6	(a)		**Process P** F1 Process P is simple diffusion through phospholipid bilayer P1 Examples of substances involved are small uncharged molecules such as oxygen / carbon dioxide / water. P2 Lipid soluble molecules such as glycerol / fatty acids / vitamin A, D, E, and K	 1 1 1	
		(ii)	**Process Q** F2 Process Q is facilitated diffusion through carrier protein P1 Examples of substances are large water-soluble Molecules such as glucose / amino acids. P2 The molecules bind to specific carrier protein P3 Carrier protein changes it shape and allow the molecules to pass through it P4 Process Q does not need energy P5 Process Q occur follow the concentration gradient	1 1 1 1 1	
			Process R F3 Process R is active transport through carrier protein P1 Examples of substances involved small water-soluble molecules or ions such as K^+ and Na^+. P2 The molecules or ions bind to specific carrier proteins P3 that use energy from ATP (to transport the molecules or ions) P4 Process Q occurs against a concentration gradient Any 10	1 1 1 1 1	Max: 10
	(b)		**In Solution A** P1 Solution A is hypotonic to the red blood cell /cytoplasmic fluid / osmotic concentration of red blood cell. P2 Water diffuses into the cell P3 by osmosis P4 causing the cell to swell up / burst P5 The cell undergone haemolysis	1 1 1 1 1	

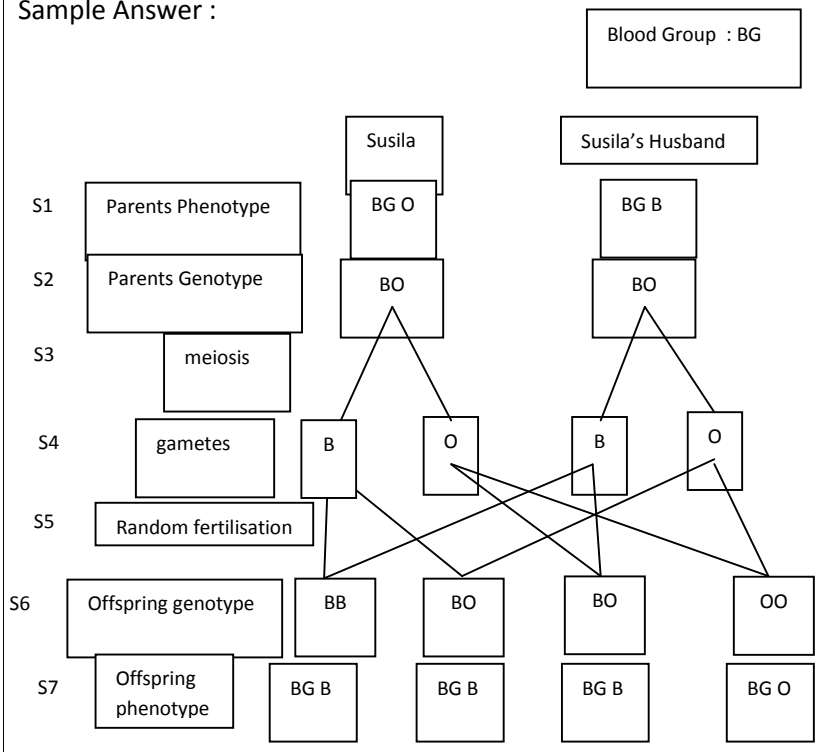
No			Marking Criteria	Marks	Total Marks
			In Solution B P6 Solution B is hypertonic to red blood cell / cytoplasmic fluid / osmotic concentration of red blood cell. P7 Water diffuses out of the cell P8 By osmosis P9 Causing the cells to shrink and crenate P10 The cell / Red blood cell undergone creanation Any 6	1 1 1 1 1	6 Marks
	(c)		P1 Table salts gives the hypertonic condition to the surrounding / body fluid of leeches. P2 Water diffuses out of leeches P3 by osmosis P4 Leeches becomes dehydrated P5 and make it released from human skin and eventually die.		4 Marks
			TOTAL	20 MARKS	
7	(a)		Able to explain how the following organs or system functions in a fight or flight situation <u>Sample Answer</u>: (i) P1 Eyes act as sense organ/ receptor to detect an external stimulus / snake P2 A nerve impulse is transmitted to the brain.	 1 1	10 Marks
			(ii) P3 Brain / Hypothalamus received the nerve impulse. P4 Interpret the nerve impulse. P5 Transmit nerve impulses to different effectors / adrenal gland / muscle / heart / lungs.	1 1 1	
			(iii) P6 Endocrine gland / Adrenal gland secrete adrenaline / noradrenaline. P7 Adrenaline / Noradrenaline / hormone stimulate an increase in heartbeat / breathing rate / blood pressure / blood glucose level / metabolic activity.	1 1	
			(iv) P8 Heart beats faster / Blood pressure increases P9 More glucose/oxygen is transported in the blood. to muscles	1 1	
			(v) P10 Muscles carry out cell respiration. P11 More energy is produced. P12 More muscle contraction P13 Legs can run faster Any 10 points	1 1 1 1	

No			Marking Criteria	Marks	Total Marks
7	(b)		P1 When the shoot /seedlings/plants is exposed to the sun from all directions, auxin is distributed uniformly. P2 The seedlings/ plant grow straight upward. P3 When the shoot/plant is exposed to the sun from one side, auxin is found in a higher concentration at the side sheltered from the sun. P4 The different concentration causes the cell in the sheltered side to grow faster than on the brighter side. P5 The shoot grows bending towards the sun. P6 The growth of plants towards the sun is called phototropism. [Any 6]	1 1 1 1 1 1	6 marks
7	(c)		P1 (Phototropism) helps plant to get maximum amount of sunlight for photosynthesis P2 (Geotropism) assures that the roots grow into the soil to hold the plants firmly in the soil. P3 (hydrotropism) help the roots to get water and mineral salts from the soil P4 (Thigmotropism) enables plants with soft stem to climb on their support P5 to get maximum amount of sunlight for photosynthesis [Any 4]	1 1 1 1 1	4 marks
				20 marks	

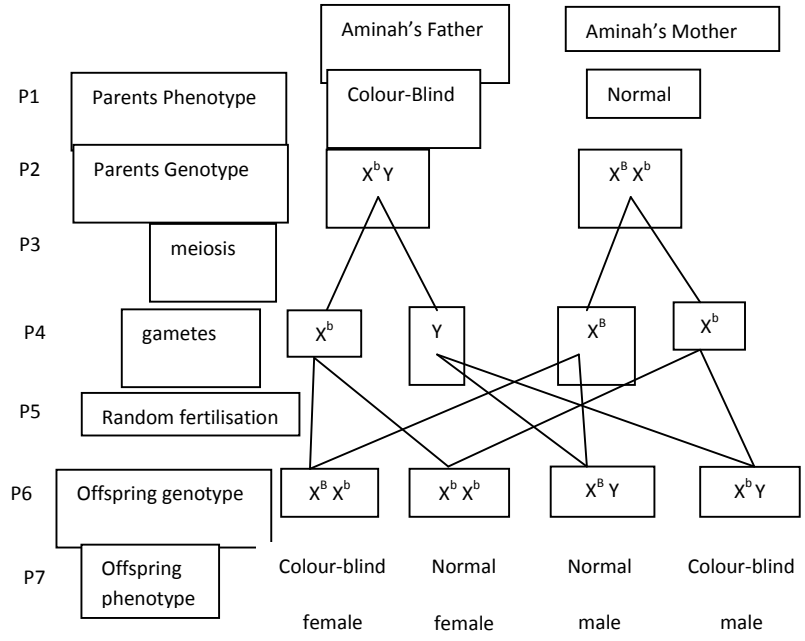
No.	Marking Scheme	Mark

8. (a)	Sample Answer :
	
	C1 : The babies have been exchanged
	
	 
	
	Any three Ps / Mana-mana tiga P
	
	Note : Reject any P without the label
	
	C2 : Probability of the offspring has Blood Group O is zero
	// It is impossible that the couple will give birth to a Blood Group O baby.
	// the couple will only give birth to the baby which has either blood group B or A.
	// They are not the biological parents of Devaraj / Devaraj is not the baby of Devi and her husband.
		1
		
		1
		
		1
		
		1
		
		1
		
		1
		
		1
		
		1
		
		1

No.	Marking Scheme	Mark

8. (a)	Sample Answer :
	 
	
	Any four S / Mana-mana empat S
	
	Note : Reject any S without the label
	
	C3 : Probability of the offspring is Blood Group A is zero
	// It is impossible that the couple will give birth to a Blood Group A baby.
	// the couple has the possibility to give birth to a Blood Group O baby / Devaraj
	// Shanta is not the baby for Susila and her husband.
	
	Ignore : (BB X BO) and (BB X BB)
	Basically and logically can be accepted, but the student is not trying to make the argument (they don't know where to place the baby with blood group O , Devaraj.)
	- HOTS
	
	Total : C1 + Any 3 P + C2 + Any 4 S + C3 = 10
		1
		1
		1
		1
		1
		1
		1
		1

No.	Marking Scheme	Mark	
8 (b)	Sample Answer :		10



P8 : Colour blindness is a sex-linked disease / disorder / inheritance	1	
P9 : It is caused by a recessive allele	1	
P10 : Aminah's mother is a colour blindness carrier	1	
P11 : The probability that Aminah's younger brother is also a colour blindness is 0.5 / 50% / ½	1	
Any 10 Ps		

No			Marking Criteria	Marks	Total Marks
9	(a)		<u>Punca pencairan glasier (4 m)</u> P1 : Pemanasan global/kesan rumah hijau P2: Peningkatan dalam penggunaan bahan api fosil /pembakaran hutan /pembakaran terbuka P3 : Penebangan hutan/penerokaan hutan mengurangkan penggunaan karbon dioksida oleh tumbuhan untuk proses fotosintesis P4 : Menyebabkan peningkatan gas-gas rumah hijau seperti karbon dioksida dalam atmosfera P5: Gas Karbon dioksida menyerap haba/memerangkap haba P6 : meningkatkan suhu bumi [Mana-mana 4]	1 1 1 1 1 1	4 Markah
			<u>Kesan kepada Persekitaran, Manusia dan Habitat (6 m)</u> P7 : Peningkatan aras laut P8 : Kawasan tanah rendah akan ditenggelami air P9 : memusnahkan penempatan manusia / memusnahkan tanaman/habitat haiwan darat berhampiran pantai P10: Kepupusan haiwan// Pencairan glasier menyebabkan haiwan seperti beruang kutub akan pupus/ikan, burung yang bergantung kepada glasier untuk hidup akan pupus. P11: Perubahan cuaca akan berlaku P12 : menyebabkan banjir dan kemarau , P12 : tanaman akan rosak/mengurangkan hasil pertanian P13 : Krisis makanan dunia. P14 : Sesetengah kawasan seperti penduduk di pergunungan Himalaya akan mengalami kekurangan bekalan air bersih [Mana-mana 6]	1 1 1 1 1 1 1 1 1 1	6 Markah
					10 Markah

No			Marking Criteria	Marks	Total Marks
		(b)	ustifikasi untuk tidak menggunakan racun serangga. P1 : Bukan hanya membunuh serangga perosak tetapi juga serangga serta haiwan lain yang berguna kepada manusia contoh serangga yang membantu proses pendebungaan. P2: Menyebabkan pencemaran tanah apabila digunakan secara berlebihan P3: Sebahagiannya akan dibawa oleh air hujan ke sungai/kolam P4: Menyebabkan pencemaran air P5: Menyebabkan hidupan akuatik mati P6 : Bahan kimia dalam racun serangga adalah tidak biodegredasi menyebabkan ianya akan kekal dalam ekosistem pada jangka masa yang lama P7 : Sebahagiaanya akan kekal dalam rantai makanan, berkumpul dalam tisu pengguna yang memakan serangga. P8: Sisa toksik akan meningkat pada organisma dalam aras trof yang lebih tinggi P9: Menyebabkan hidupan tersebut mati. P10 : Menyebabkan mutasi P11 : Daya ketahanan terhadap racun serangga tersebut meningkat. (Beberapa serangga mungkin selamat daripada racun serangga tersebut dan mewujudkan ketahanan diri yang lebih menyebabkan dos yang lebih tinggi diperlukan untuk memusnahkan serangga tersebut) P12 : Sukar dihapuskan Mana-mana 8 P	1 1 1 1 1 1 1 1 1 1 1 1	8 markah

No			Marking Criteria	Marks	Total Marks
			<u>Cara alternatif yang boleh digunakan untuk menggantikan racun serangga:</u> P11 : Menggunakan Kaedah Kawalan Biologi untuk mengawal populasi serangga perosak P12 : Perosak di makan oleh pemangsa P13 : Kaedah ini tidak mencemarkan alam sekitar <u>Mana-mana 2</u>	1 1 1	2 Markah
			Jumlah		20 Markah