MPSM

MAJLIS PENGETUA-PENGETUA SEKOLAH MENENGAH (CAWANGAN PULAU PINANG)

MODUL SOALAN BERFOKUS SPM 2019

ANJURAN MPSM CAWANGAN PULAU PINANG
DENGAN KERJASAMA
SEKTOR PENGURUSAN AKADEMIK
JABATAN PENDIDIKAN PULAU PINANG

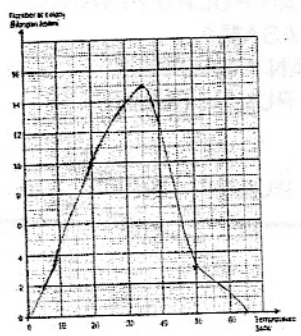
JABATAN PENDIDIKAN PULAU PINANG

SAINS

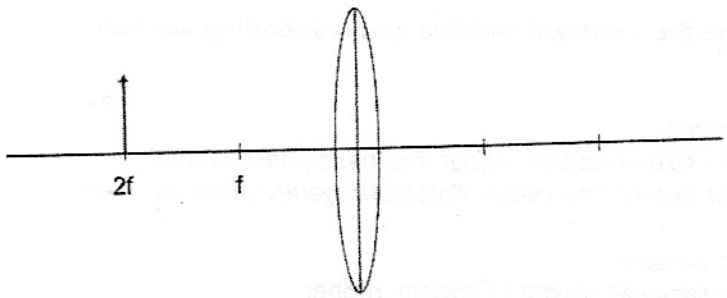
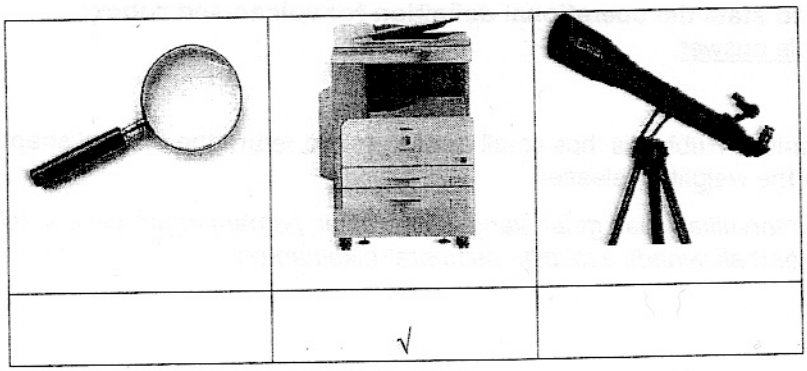
KERTAS 2

SKEMA PEMARKAHAN

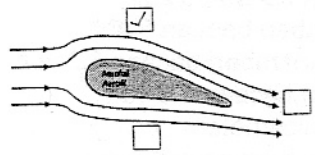
UNTUK KEGUNAAN PEMERIKSA SAHAJA

Question	Mark Scheme	Sub Mark	Total Mark
1(a)	**Able to Count the number of bacteria colony.** Answer 10	1	
(b)	**Able to draw a graph of temperature against the number of colony.** Answer  5 points – 1 mark Smooth line -1 mark	1+1	
(c)	**Able to relationship between number of colony and temperature from 0°C to 30°C** Answer When time increase, the number of colony increase.	1	
(d)	**Able to state the number of colony at 30°C.** Answer 14 / refer graph	1	5

Question	Mark Scheme	Sub Mark	Total Mark
2(a)	**Able to complete table** Answer 11.2 cm	1	
(b)	**Able to state the constant variable and responding variable** Answer	1+1	
(i)	Constant variable : Initial length / size of rubber/ rubber thickness/ mass weight. *panjang asal getah/ Size getah /Ketebalan getah/ Jisim pemberat*		
(ii)	Responding variable Length after removed weight / Elasticity rubber *Panjang selepas pemberat dikeluarkan / kekenyalan getah*		
(c)	**Able to state the hypothesis** Sample answer Vulcanised rubber is more elastic than non vulcanised rubber. *Getah tervulkan lebih kenyal daripada getah tak tervulkan* Non vulcanised rubber is less elastic then vulcanised rubber *Getah tak tervulkan kurang kenyal daripada getah tervulkan.* The vulcanised rubber produces a slight elongation *Getah tervulkan menghasilkan pemanjangan yang sedikit.* Non vulcanised rubber produces larger extension *Getah tak tervulkan menghasilkan pemanjangan yang lebih besar.*	1	
(d)	**Able to state the operational definition for vulcanised rubber** Sample answer Vulcanised Rubber is has small extension and return the original shape when the weight is released. *Getah tervulkan ialah getah yang mempunyai pemanjangan yang sedikit dan kembali kepada asal bila pemberat dikeluarkan..*	1	5

Question	Mark Scheme	Sub Mark	Total Mark
3(a)	**Able to Complete the ray diagram to show the image formed by the convex lens** Answer  	1+1	
(b)	**Able to state one characteristic of the image formed by the convex lens.** Answer Nyata/Songsang/Sama size	1	
(c)	**Able to measure the size of the image formed by the convex lens** Answer 0.9 ± 0.1	1	
(d)	**Able to Tick (√) optical instrument which use the principle**  √	1	

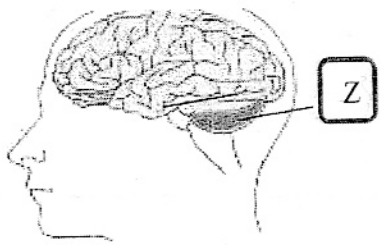
Question	Mark Scheme	Sub Mark	Total Mark
4(ai)	**Able to state the observation** Answer 1. Pasangan logam kuprum dan zink memberi bacaan 5 volt 2. Pasangan logam kuprum dan kuprum memberi bacaan 0 volt 3. Pasangan logam kuprum dan magnesium memberi bacaan 6.2 volt 4. Pasangan logam kuprum dan besi memberi bacaan 4.5 volt 5. Pasangan logam yang sama tiada bacaan voltmeter 6. Pasangan logam yang berbeza mempunyai bacaan voltmeter	1	
(ii)	**Able to state inference** Answer Tenaga elektrik terhasil	1	
(b)	**Able to arrange the metals in the reactivity series in ascending order** Copper *Kuprum* → Iron Besi → Zinc Zink → Magnesium *Magnesium* Reactivity increases *Kereaktifan meningkat* Betul semua - 2 markah Betul 2 dan 3 -1 markah Betul 1- tiada markah	1+1	
(c)	**Able to predict the voltmeter reading** Answer 5.0 – 6.2 v	1	5

Question	Mark Scheme	Sub Mark	Total Mark
5(a)	**Able to mark (√) in the box** Answer 	1	
(b)	**Able to name the principle** Answer Bernoulli Principle	1	
(c)	**Able to mark(√) the vehicle that apply this principle** Answer Aeroplane / *Kapal terbang* ✓ | Hot air balloon / *Belon udara panas* | Jet engine / *Enjin jet*	1	
(d)	**Able to complete the sentence** Answer cepat, menurun lambat, meningkat (mana mana satu)	1+1	
(e)	**Able to state the result** Answer Tin aluminium akan bergerak ke arah satu sama lain	1	6

Question	Mark Scheme	Sub Mark	Total Mark
6(a)	**Able to state two chemicals that are found in the food** Answer Asid benzoik dan perisa	1+1	
(b)	**Able to state role of gelatin in the food** Answer Sebagai penstabil	1	
(c)	**Able to state why is benzoic acid added to the food** Answer Supaya makanan tidak rosak dengan cepat	1	
(d)	**Able to state information should be written on the label** Answer Alamat Pengilang dan tarikh luput	1+1	

Question	Mark Scheme	Sub Mark	Total Mark
7(a)	**Able to name the neurone Q and P** Answer	1+1	
(i)	Neuron deria		
(ii)	Neuron motor		
(b)	**Able to state the function neurone R** Answer Menghantar impuls daripada neuron deria ke neuron motor.	1	
(c)(i)	**Able to mark (√) part X and Y** Answer	1	
(ii)	**Able to explain why X is folded** Answer Increases the surface area to place more neurons. *Menambahkan luas permukaan supaya dapat menempatkan lebih banyak neuron.*	1	
(d)	**Able to mark Z in Diagram**	1	6

Cerebrum *Serebrum*	√
Cerebellum *Serebelum*	
Medula oblongata *Medula oblongata*	√



Question	Mark Scheme	Sub Mark	Total Mark
8(a)	**Able to identify alloy P** Answer P : Duralumin	1	
(b)	**Able to mark (√) for X** Answer Tin *Timah* | √	1	
(c)	**Able to match the alloys with their uses** Answer **Alloys** ***Aloi*** / **Uses** **Kegunaan** Brass *Loyang* →  Pewter *Piuter* → 	1+1	
(d)(i)	**Able to name the alloy used to build the railway** Answer Aloi superkonduktor	1	
(d)(ii)	**Able to state one characteristic of alloy in d(i)** Answer Dapat mengkonduksi arus elektrik yang tinggi tanpa rintangan / tidak akan menghasilkan haba	1	6

Question	Mark Scheme	Sub Mark	Total Mark
9(a)	**Able to name the producer and secondary consumer.** Answer	1+1	
(i)	Algae // alga		
(ii)	small fish // big fish// prawn //ikan kecil//ikan besar//udang	1	
(b)	**Able to state what happen to the population of big fish.** Answer		
	Decrease // berkurang	1	
(c)	**Able to draw the food chain.** Answer		
	1. Algae → guppy fish → small fish → big fish // Alga → ikan gapi → ikan kecil → ikan besar		
	2. Algae → guppy fish → prawn → big fish // Alga → ikan gapi → udangl → ikan besar		
	3. Algae → tadpole → prawn → big fish // Alga → berudu → udang → ikan besar		
	4. Algae → tadpole → small fish → big fish // Alga → berudu → ikan kecil → ikan besar	2	
(d)	**Able to complete the numbers of pyramid** Answer		
	1. Big fish // ikan besar 2. Algae // alga		6

Question	Mark Scheme	Sub Mark	Total Mark
10(a)	**Able to relate the responding variable with the manipulated variable** Sample Answer 1. Nasi di dalam periuk aluminium mendidih lebih cepat berbanding air di dalam periuk tanah liat. // sebaliknya 2. Periuk aluminium adalah konduktor haba yang lebih baik dari periuk tanah liat // sebaliknya 3. Periuk aluminium mengkonduksikan haba lebih baik dari periuk tanah liat// sebaliknya	1	1
b(i)	**Able to state the aim of the experiment** Sample Answer 1. Untuk mengkaji/menyiasat hubungan di antara jenis rod dengan kekonduksian haba. 2. Untuk mengkaji/menyiasat hubungan di antara jenis rod dengan masa yang diambil untuk paku tekan jatuh	1	2
(ii)	**Able to state any two type of variables** Constant variable Sample Answer 1. Saiz / panjang rod 2. Bilangan/jenis paku tekan 3. Jarak penunu Bunsen dengan rod Manipulated variable Sample Answer 1. Jenis rod 2. Jenis bahan Responding variable Sample Answer 1. Kekonduksian haba 2. Masa yang diambil untuk paku tekan jatuh	1+1	

Question	Mark Scheme	Sub Mark	Total Mark
(iii)	**Able to list the apparatus needed** Sample Answer Rod kuprum , rod kaca , kaki retort, penunu Bunsen, lilin, paku tekan **dan jam randik**	1	1
(iv)	**Able to state the procedures** Sample Answer 1. Kepitkan rod kuprum pada kaki retort // Rajah – pt 1 2. Lekatkan paku tekan pada rod kuprum menggunakan lilin // Rajah – pt2 3. Nyalakan penunu Bunsen pada hujung rod // Rajah – pt3 4. Rekodkan kekonduksian haba /masa yang diambil untuk paku tekan jatuh – pt4 5. Ulangi langkah 1 – 4 dengan menggunakan rod kaca// rajah – pt 5	1x4	4
(v)	**Able to build a table which consists of manipulated variable and responding variable** Sample Answer Jenis rod | Kekonduksian haba // Masa yang diiambil untuk paku tekan jatuh Rod kuprum | Rod kaca |	1	10

<table>
<tr><th>Question</th><th>Mark Scheme</th><th>Sub Mark</th><th>Total Mark</th></tr>
<tr><td>11(a)</td><td>Able to state four differences between continuous variation and discontinuous variation.

<u>Sample answers</u>

<table>
<tr><th>Variasi selanjar</th><th>Variasi tak selanjar</th></tr>
<tr><td>1.Tidak menunjukkan perbezaan yang ketara</td><td>1.Menunjukkan perbezaan yang ketara</td></tr>
<tr><td>2.Tidak boleh diwarisi daripada induk / faktor faktor</td><td>2.Diwarisi daripada induk / faktor genetik</td></tr>
<tr><td>3. Dipengaruhi oleh faktor persekitaran dan faktor genetik</td><td>3.Tidak dipengaruhi faktor persekitaran</td></tr>
<tr><td>4.Sifat boleh berubah sepanjang hayat</td><td>4.Sifat tidak berubah sepanjang hayat / kekal</td></tr>
</table></td><td>1+1+1+1</td><td>4</td></tr>
<tr><td>(b)(i)</td><td>Able to identify two common characteristics

<u>Sample answers</u>

1. Perubahan berlaku dalam gen
2. Perubahan berlaku secara spontan
3. Boleh diwarisi
4. Perubahan sifat pada anak
5. Boleh menyebabkan kecacatan
[mana-mana dua]</td><td>1+1</td><td>2</td></tr>
<tr><td>(ii)</td><td>Able to give another one example of gene mutation

<u>Sample answers</u>

1. Buta warna
2. Talasemia
3. Hemofilia
[mana-mana satu]</td><td>1</td><td>1</td></tr>
</table>

Question	Mark Scheme	Sub Mark	Total Mark
(iii)	**Able to give one example the effect of chromosome mutation** Sample answers 1. Sindrom Down 2. Sindrom Turner 3. Sindrom Klinefelter [mana-mana satu] **Able to state one of its characteristic** Sample answers 1.Perubahan berlaku pada struktur atau bilangan kromosom 2. Perubahan berlaku secara spontan 3. Perubahan sifat pada anak 4. Boleh menyebabkan kecacatan [mana-mana satu]	1+1	
(iv)	**Able to relate the common characteristics to construct the concept of gene mutation** Sample answer Mutasi gen ialah mutasi / perubahan yang berlaku secara spontan dan perubahan berlaku dalam gen. Nota Terima mana-mana dua ciri sepunya	1	6

Question	Mark Scheme	Sub Mark	Total Mark
12(a)	**Able to state two advantages of plastic.** Sample answers 1. Light/*/ringan* 1. Cheap/*/murah* 2. Strong /*/*kuat 3. Good shock absorbent */ penyerap hentakan yang baik* 4. Chemical resistant */ kalis bahan kimia* 5. Water resistant */ kalis aiir* 6. Easily moulded */ mudah diacu* 7. Odourless */ tidak berbau* 8. Unbreakable */ tidak mudah pecah* 9. Durable */ tahan lama* 10. Good heat insulator */ penebat haba yang baik* 11. Good electric insulator */ penebat elektrik yang baik* **Able to state two disadvantages of plastic** 1. Low heat resistant */ tidak tahan haba* 2. Produce toxic fumes when burnt*/ membebaskan asap beracun apabila dibakar* 4.Poor ductility */ kurang mulur* 5.Cause cancer*/ menyebabkan kanser* 6.Non biodegradable*/ tidak terbiodegradasi*	2+2	4
(b)(i)	**Able to identify the problem** Answer Respiratory diseases (among people) */* *Penyakit pernafasan (dalam kalangan orang ramai).*	1	
(ii)	**Able to clarify the problem** Answer Plastic waste (is illegally dumped and) burnt */* *Sisa plastik (dibuang dan) dibakar(secara haram)*	1	

Question	Mark Scheme	Sub Mark	Total Mark
(iii)	**Able to suggest three methods of solving the problem** Sample answers 1. Organize public awareness campaign on proper disposal of plastic materials/ Educate the public// *Menganjurkan kempen untuk kesedaran awam tentang kaedah pembuangan bahan plastik / Didik orang awam* 2. Recycle the plastic// *Kitar semula bahan plastik* 3. Reuse the plastic material// *Guna semula bahan plastik* 4. Use biodegradable materials// *Guna bahan terbiodegradasi* 5. Burn plastic in incinerator// Bakar plastic dalam incinerator 6. Reduce the use of plastic// *Kurangkan penggunaan plastik* 7. Inforcement of law/ give penalty // *Penguatkuasaan undang-undang / denda*	1+1+1	
(iv)	**Able to choose the best method and its explanation** The best method is organize public awareness campaign on proper disposal of plastic materials to overcome respiratory diseases (among people). *Kaedah terbaik ialah menganjurkan kempen untuk kesedaran awam tentang kaedah pembuangan bahan plastic supaya dapat mengatasi penyakit pernafasan (dalam kalangan orang ramai.)*	1	10

MODUL BERFOKUS KBAT SPM

SKEMA SAINS KERTAS 1

JAWAPAN DAN ARAS SOALAN

Soalan	Tajuk	Jawapan	Rendah		Sederhana		Tinggi	
			P	K	A	AN	S	P
1	Body Coordination	C	/					
2	Body Coordination	B			/			
3	Body Coordination	A			/			
4	Body Coordination	B		/				
5	Heredity and Variation	A			/			
6	Heredity and Variation	B		/				
7	Heredity and Variation	D		/				
8	Heredity and Variation	C					/	
9	Matter and Substances	C					/	
10	Matter and Substances	A		/				
11	Matter and Substances	D	/					
12	Matter and Substances	C		/				
13	Energy and Chemical Changes	A			/			
14	Energy and Chemical Changes	C		/				
15	Energy and Chemical Changes	B			/			
16	Energy and Chemical Changes	A		/				
17	Nuclear Energy	C	/					
18	Nuclear Energy	D	/					
19	Nuclear Energy	D			/			
20	Nuclear Energy	C				/		
21	Light, Colour and Sight	D			/			
22	Light, Colour and Sight	C			/			
23	Light, Colour and Sight	B		/				
24	Light, Colour and Sight	D	/					
25	Chemical in Industry	B			/			
26	Chemical in Industry	A	/					
27	Chemical in Industry	C		/				
28	Microorganisms and Their Effect on Living Things	B		/				
29	Microorganisms and Their Effect on Living Things	B					/	
30	Microorganisms and Their Effect on Living Things	A					/	
31	Microorganisms and Their Effect on Living Things	B						/
32	Nutrition	D			/			
33	Nutrition	A					/	
34	Nutrition	D					/	

35	Preservation and Conservation of the Environment	A						/
36	Preservation and Conservation of the Environment	A		/				
37	Carbon and compound	A		/				
38	Motion	C	/					
39	Motion	B			/			
40	Motion	D		/				
41	Motion	B				/		
42	Food Technology and Production	C						/
43	Food Technology and Production	B	/					
44	Food Technology and Production	A			/			
45	Synthetic Material in Industry	C		/				
46	Synthetic Material in Industry	B	/					
47	Synthetic Material in Industry	D			/			
48	Synthetic Material in Industry	D	/					
49	Electronics and Information and Communication Technology (ICT)	D						/
50	Electronics and Information and Communication Technology (ICT)	A	/					
	Jumlah	50	11	14	13	2	6	4
	Nisbah		25		15		10	

Nota: P-Pengetahuan, K-Kefahaman, A- Aplikasi, AN-Analisis, S-Sinteis, P-Penilaian