

**KERTAS 3**

Item Berstruktur

No Soalan	Bidang Pembelajaran // Learning Area	Taburan Skor	Stimulus	Pembina Item
1	**Chapter 6 (frm 5) variation	11 aspects of science process skill. Score = 33 marks	Diagram	LATIFAH

Item Esei

No Soalan	Bidang Pembelajaran	Taburan Skor	Stimulus	Pembina Item
2	**Chapter 8 (Frm 4) Dynamic ecosystem	5 aspects of science process skill. Score = 17 marks	Diagram/ Schematic diagram/ flow chart / statement	LATIFAH

**Catatan :**

1. Format :

- Soalan dibina dalam dwibahasa mengikut lay-out Kertas Biology SPM 2008.
- Font : Arial 11
- Single spacing
- Margin : 1 cm top, bottom and right. 1.5cm left.
- Page centre bottom

2. Peraturan Permarkahan hendaklah disediakan secara rubrik (seperti lay-out Peraturan Permarkahan Kertas Biology SPM 2008)

3. Semua item yang dibina mestilah asli. Elakkan menceduk secara langsung dari buku-buku rujukan atau buku kerja untuk menjaga kewibawaan kertas dan mengelakkan sebarang masalah perundangan.

**EDITOR:**

1. PUAN DOREEN TAN HONG LIN – KERTAS 1
2. PUAN NORAZIAN BT ABD MANAFF – KERTAS 2
3. ENCIK NG AIK BEE – KERTAS 3















JABATAN PELAJARAN  
NEGERI JOHOR

PEPERIKSAAN PERCUBAAN SPM 2009  
TINGKATAN 5  
BIOLOGI  
Kertas 3  
September

**PERATURAN PEMARKAHAN**

JANGAN BUKA BUKU PERATURAN PEMARKAHAN SEHINGGA PEPERIKSAAN  
TELAH DIJALANKAN

**SCHEME QUESTION 1 ( P3 TRIAL 2009)**

No	MARK SCHEME	Score									
1(a) [KB0603 - Measuring Using Numbers]	<p>Able to record all the data correctly.</p> <p><u>Sample answers:</u></p> <table border="1"> <tr> <td>  Whorl                 </td> <td>  Loop                 </td> <td>  Composite                 </td> <td>  Arch                 </td> </tr> <tr> <td>Number of Students Bilangan pelajar</td> <td>12</td> <td>10</td> <td>22</td> <td>6</td> </tr> </table>	 Whorl	 Loop	 Composite	 Arch	Number of Students Bilangan pelajar	12	10	22	6	3
 Whorl	 Loop	 Composite	 Arch								
Number of Students Bilangan pelajar	12	10	22	6							
	Able to record 3 data correctly	2									
	Able to record 2 data correctly	1									
	Able to record only 1 data or not able to respond / wrong response.	0									
(b) (i) [KB0601 - Observation]	<p>Able to state two different correct observations</p> <p><u>Sample answers:</u></p> <ol style="list-style-type: none"> <li>The number of students with the pattern of thumbprint composite is 22.</li> <li>The number of students with the pattern of thumbprint arch is 6.</li> <li>The number of students with thumbprint composite is highest/higher than the other patterns.</li> </ol> <p>Able to state one correct observation and one inaccurate observation.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>The number of students with the pattern of thumbprint composite is high.</li> <li>The number of students with the pattern of thumbprint arch is low.</li> </ol>	3									
	Able to state one correct observation and one inaccurate inference or able to state two inaccurate inferences.	2									

	<p>Able to state only one correct observation or two observation at idea level.</p> <p><u>Sample answer :</u></p> <ol style="list-style-type: none"> <li>The number of student for each thumbprint is different.</li> <li>Every student have different pattern of thumbprint .</li> </ol> <p>No response or incorrect response or two inaccurate observation or one idea only.</p>	1
(b) (ii) [KB0604 - Making Inference]	<p>Able to make two correct inferences based on two aspects</p> <ol style="list-style-type: none"> <li>Dominant / recessive</li> <li>Number of students highest / not highest</li> </ol> <p><u>Sample answer :</u></p> <ol style="list-style-type: none"> <li>The composite pattern of thumbprint is dominant (to other patterns of thumbprint) because it has the largest/highest number of students.</li> <li>The arch pattern of thumbprint is not dominant / recessive (to other patterns of thumbprint) because it is not the largest number</li> </ol> <p>Able to state one correct inference and one inaccurate inference or able to state two inaccurate inferences.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Composite thumbprint is dominant.</li> <li>Arch thumbprint is not dominant.</li> </ol> <p>Able to state only one correct inference or able to state two inference at idea level.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Thumbprint is an example of variation.</li> </ol> <p>No response or inaccurate respons.</p>	3
	<p>Able to state one correct inference and one inaccurate inference or able to state two inaccurate inferences.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Composite thumbprint is dominant.</li> <li>Arch thumbprint is not dominant.</li> </ol> <p>Able to state only one correct inference or able to state two inference at idea level.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Thumbprint is an example of variation.</li> </ol> <p>No response or inaccurate respons.</p>	2
	<p>Able to state only one correct observation or two observation at idea level.</p> <p><u>Sample answer :</u></p> <ol style="list-style-type: none"> <li>The number of student for each thumbprint is different.</li> <li>Every student have different pattern of thumbprint .</li> </ol> <p>No response or incorrect response or two inaccurate observation or one idea only.</p>	1
	<p>Able to state one correct inference and one inaccurate inference or able to state two inaccurate inferences.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Composite thumbprint is dominant.</li> <li>Arch thumbprint is not dominant.</li> </ol> <p>Able to state only one correct inference or able to state two inference at idea level.</p> <p><u>Sample answer:</u></p> <ol style="list-style-type: none"> <li>Thumbprint is an example of variation.</li> </ol> <p>No response or inaccurate respons.</p>	0

(c) [KB0610 - Controlling Variable]	Able to state 3 variables and methods to handle each variable correctly. <u>Sample answer</u> <table border="1"> <tr> <th>Variable</th> <th>Method to handle the variable</th> </tr> <tr> <td>Manipulated variable</td> <td>Different patterns of thumbprint are examined and identified</td> </tr> <tr> <td>Responding Variable: number of student/ Dominant / not dominant of Thumbprint</td> <td>Count the number of students with each pattern of thumbprint and record the data.</td> </tr> <tr> <td>Constant variable 1.Type of finger 2.The thumb</td> <td>1. Use the same type of finger 2. All the student use the thumb</td> </tr> </table>	Variable	Method to handle the variable	Manipulated variable	Different patterns of thumbprint are examined and identified	Responding Variable: number of student/ Dominant / not dominant of Thumbprint	Count the number of students with each pattern of thumbprint and record the data.	Constant variable 1.Type of finger 2.The thumb	1. Use the same type of finger 2. All the student use the thumb	3
		Variable	Method to handle the variable							
		Manipulated variable	Different patterns of thumbprint are examined and identified							
		Responding Variable: number of student/ Dominant / not dominant of Thumbprint	Count the number of students with each pattern of thumbprint and record the data.							
Constant variable 1.Type of finger 2.The thumb	1. Use the same type of finger 2. All the student use the thumb									
Able to state 4 – 5 ticks	2									
Able to state 2 – 3 ticks	1									
No response or incorrect responses or 1 ticks only	0									
(d) [KB0611 - State Hypothesis ]	Able to state the hypothesis relating the manipulated variable and the responding variable correctly : P1 : manipulated variable. (pattern of thumbprint) P2 : responding variable (number of student/ H : relationship <u>Sample answer</u> 1. When the pattern of thumbprint is composite/whorl /loop/arch, the number of students is highest. 2. When the pattern of thumbprint is dominant, the number of students is the highest. 3. When the pattern of thumbprint is recessive, the number of students is the lowest 4. The composite pattern of thumbprint is dominant when the number of the student is the lowest. <b>highest</b> 5. The arch pattern of thumbprint is recessive when the number of the student is the lowest.	3 P1 +P2+H								

(e) (i) [KB0606 – Communic ating data ]	Able to state a hypothesis relating the manipulated variable and the responding variable but less accurately. <u>Sample answer</u> : 1. The number of student is influence by the pattern of thumbprint.	2					
	Able to state one idea of a hypothesis. <u>Sample answer</u> 1. Different student has different pattern of thumbprint	1					
	No response or incorrect respons	0					
	Able to construct a table correctly with the following aspects: T : Titles - 1 mark S : Pattern of thumbprint - 1 mark D : Number of students - 1 mark <u>Sample answer</u> : <table border="1"> <tr> <th>Pattern of thumbprint</th> <th>Number of students</th> </tr> <tr> <td>Whorl</td> <td>12</td> </tr> <tr> <td>Loop</td> <td>10</td> </tr> </table>	Pattern of thumbprint	Number of students	Whorl	12	Loop	10
Pattern of thumbprint	Number of students						
Whorl	12						
Loop	10						
	Any two correct aspect	2					
	Any one aspect correct	1					
	No response or incorrect respons	0					

(e) (ii) [KB0607 – Correlating time and space]	Able to draw the histogram correctly which include the following aspects: P(paksi) : title of x-axis and y-axis - 1 mark T(Titik) : 4 bars drawn with correct number of students - 1 mark B(bentuk) : 4 bars - 1 mark	3
	Any two correct aspect	2
	Any one aspect correct No response or incorrect response	1 0
(f)	Able to determine and give reasons correctly based on the following criteria. R1 : Type of variation – discontinuous variation R2 : there is no range of values between the different type of thumbprint patterns R3 : influence by genetic factor only // not influence by environmental factor //the students either have the particular type of thumbprint or do not have it or have another type.	3
	<u>Sample answer:</u> 1. - The type of variation found in thumbprint is discontinuous variation because there is no range of values between the different thumbprint patterns and the students either have the particular type of thumbprint or do not have it // influence by genetic factor only.	2

(g) [KB 0605 - Predicting]	Able to explain the relationship using one aspect only. <u>Sample answer:</u> 1. Thumbprint is discontinuous variation. No response or incorrect response	1
	Able to predict and explain the outcome of the experiment correctly with the following criteria: C1 : Predict the shape of the histogram C2 : Type of variation C3 : Factors that influence variation <u>Sample answer</u> C1 : bell shape / normal distribution C2 : Height is continuous variation C3 : Height is influence by both genetic and environment factors	0 3
	1. The shape of histogram is normal distribution / bell shape because the height is continuous variation and influence by the genetic and environment factors. Any two criteria stated	2
h) [KB0609 – define operationally]	Any one criteria stated	1
	No response or incorrect response	0
	Able to define operationally the discontinuous variation. C1 : Numbers of student C2 : The shape of histogram C3 : Factors that influence <u>Sample answer:</u> 1. Discontinuous variation can be determined by counting the numbers of student with different pattern of thumbprint and shown in the bar chart drawn, and is influence by the genetic factors.	3
	Any two criteria stated	2
	Any one criteria stated	1
	No response or incorrect response	0

Answer scheme Question 2

<p>Answer</p>	<p>Able to state problem statement by relating P1, P2 and P3 in a question form correctly.                  P1: manipulated variable                  Distance between paddy plants                  P2: responding variable                  dry mass/the height/ the growth rate of paddy plant                  P3: question form                  Sample answer:                  Does the distance between the paddy plants affect the dry mass /growth rate of paddy plant?                  Able to state problem statement inaccurately                  Sample answer:                  Distance between the paddy plants affect the dry mass of paddy plant.                  Able to state at idea level.                  Sample answer                  The paddy plants affect the dry mass                  No response or wrong response</p>	<p>3 mark                  P1+P2+P3                  Tick                  2 mark                  P1+P2/                  P1+P3/                  P2+P3/                  Tick                  1 mark                  P1/P2                  Tick                  0</p>
<p>Problem statement:                  01</p>	<p>Able to state the objective correctly                  Sample answer                  To study how the distance between the paddy plants can affect the growth rate of paddy plant.</p>	<p>3 mark                  P1+P2+H                  Tick</p>
<p>Objective</p>	<p>Able to state the hypothesis by relating two variables correctly with the following aspect                  P1: manipulated variable                  Distance between paddy plants/seedlings                  P2: responding variable                  Dry mass/the height/ the growth rate of paddy plants/seedlings                  H : relationship                  Sample answer:                  1. The longer/further/shorter/nearer the distance between the paddy plants/seedlings, the higher/lower the growth rate of paddy plant.                  2. As the distance between the seedlings increases/decreases, the growth rate of plant increases/decreases.</p>	<p>3 mark                  P1+P2+H                  Tick</p>

<p>(i)                  KB0602                  Classify</p>	<p>Able to classify the variations into different types                  Sample answer:  <table border="1" data-bbox="399 1500 734 2038"> <thead> <tr> <th>Continuous Variation</th> <th>Discontinuous Variation</th> </tr> </thead> <tbody> <tr> <td>Height</td> <td>Eye colour</td> </tr> <tr> <td>Body weight</td> <td>Ear lobe shape</td> </tr> <tr> <td></td> <td>Ability to roll tongue</td> </tr> <tr> <td></td> <td>Type of blood group</td> </tr> </tbody> </table> </p>	Continuous Variation	Discontinuous Variation	Height	Eye colour	Body weight	Ear lobe shape		Ability to roll tongue		Type of blood group	<p>3                  2                  1                  0</p>
Continuous Variation	Discontinuous Variation											
Height	Eye colour											
Body weight	Ear lobe shape											
	Ability to roll tongue											
	Type of blood group											
<p>Any two criteria stated</p>		<p>2</p>										
<p>Any one criteria stated</p>		<p>1</p>										
<p>No response or incorrect response</p>		<p>0</p>										



Cadangan Jadual Spesifikasi Ujian (JSU)

Kertas 1

Bil	Konstruk Bidang pembelajaran	PB01 Knowledge	KB01 Understanding	KB02 Application	Total	Pembina Item
1	Introduction to biology	1	1	-	2	TAN
2	Cell structure and cell organization	1	1	1	3	TAN
3	Movement of substances across the plasma membrane	2	1	1	4	SUSANTI
4	Chemical composition of the cell	1	2	1	4	SUSANTI
5	Cell division	3	2	-	5	ZULKEFLI
6	Nutrition	2	-	1	3	ZULKEFLI
7	Respiration	3	2	-	5	HOE
8	Dynamic ecosystem	2	1	-	3	HOE
9	Endangered ecosystem	3	1	1	5	LATIFAH
10	Transport	2	1	-	3	LATIFAH
11	Locomotion and support	1	1	1	3	MAZLIFAH
12	Coordination and response	2	2	-	4	MAZLIFAH
13	Reproduction and growth	1	-	2	3	NORAINI
14	Inheritance	1	-	2	3	NORAINI
15	Variation	25	15	10	50	
TOTAL						

9. The result are recorded in a table.	Tick																
Able to state any 3 K to 4 K correctly	2 Mark Tick																
Able to state any 1 K or 2 K correctly	1 mark Tick																
Wrong response or no response	0 mark Tick																
<b>Result</b>	B2 – 1 mark																
<p>Able to construct a table to record data with the following aspect</p> <ul style="list-style-type: none"> <li>Column for manipulated variable – distance between the paddy plants</li> <li>Column for operating responding variable – Average dry mass / height of paddy plants</li> <li>Growth rate of paddy plants</li> </ul> <p>- Title with correct unit</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>The distance between seedlings (cm) / Tray</th> <th>The dry mass of 10 seedlings (g)</th> <th>Average dry mass of paddy per seedlings (g)</th> <th>The growth rate of paddy seedlings (g/day)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>B</td> <td></td> <td></td> <td></td> </tr> <tr> <td>C</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>- Data is not required</p>	The distance between seedlings (cm) / Tray	The dry mass of 10 seedlings (g)	Average dry mass of paddy per seedlings (g)	The growth rate of paddy seedlings (g/day)	A				B				C				Tick
The distance between seedlings (cm) / Tray	The dry mass of 10 seedlings (g)	Average dry mass of paddy per seedlings (g)	The growth rate of paddy seedlings (g/day)														
A																	
B																	
C																	
<b>Conclusion</b>	Able to state the conclusion correctly.																
Sample answer	Tick																
The longer the distance between seedlings, the higher the growth rate of paddy plant.																	
<b>Summary planning</b>	3m																
Able to state 7-9 aspects of experimental planning which includes the following:																	
7 – 9 tick = 3																	
4 – 6 tick = 2																	
1 – 3 tick = 1																	
<b>Total Mark</b>	17																



**Kertas 2**

**BAHAGIAN A ( ITEM BERSTRUKTUR )**

No soal	Bidang Pembelajaran // learning Area	Taburan Skor	Stimulus	Pembina Item
1	<b>Chapter 8 (frm 4)</b> 1.1 understanding the biotic and abiotic components of the environment	Knowledge (PB01) = 4 marks Understanding (KB01) = 4 marks Application (KB02) = 5 marks <b>Total = 13 marks</b>	Diagram	NORAINI
2	<b>Chapter 7 (frm 4)</b> Analyzing the respiratory structures and breathing mechanisms in human and animal	PB01 = 3 marks KB01 = 4 marks KB02 = 5 marks <b>Total = 12 marks</b>	Diagram	NORAINI
3	<b>Chapter 4 (frm 4)</b> Chemical composition of the cell	PB01 = 2 marks KB01 = 3 marks KB02 = 3 marks Analysis (KB03) = 2 marks Synthesis (KB04) = 2 marks <b>Total = 12 marks</b>	Diagram/ Schematic diagram/ flow chart	MAZLIFAH
4	<b>Chapter 4 (Frm 5)</b> 4.5 Synthesising the concept of sexual reproduction in flowering plant	PB01 = 0 marks KB01 = 2 marks KB02 = 3 marks KB03 = 3 marks KB04 = 4 marks <b>Total = 12 marks</b>	Diagram/ Schematic diagram/ flow chart	MAZLIFAH
5	<b>Chapter 3 (Frm 5)</b> 3.1 Coordination and response 3.2 The role of the human nervous system.	PB01 = 2 marks KB01 = 3 marks KB02 = 4 marks KB03 = 2 marks <b>Total = 11 marks</b>	Diagram/ Schematic diagram/ flow chart	TAN

**BAHAGIAN B (ITEM RESPON TERHAD – Esei)**

No Soalan	Bidang Pembelajaran // learning Area	Taburan Skor	Stimulus	Pembina Item
6	<b>Chapter 3 (Frm4)</b> Movement of substances across the plasma membrane	(a) KB01 = 4 marks (b) KB02 = 6 marks (c) KB03 = 10 marks <b>Total = 20 marks</b>	Diagram/ Schematic diagram/ flow chart	HOE
7	<b>Chapter 1 (Frm 5)</b> 1.5 Understanding the role of the circulatory system in body defence mechanism. 1.6 Appreciating a healthy cardiovascular system	(a) KB01 = 4 marks (b) KB02 = 6 marks (c) KB03 = 10 marks <b>Total = 20 marks</b>	Diagram/ Schematic diagram/ flow chart	ZULKEFLI

No Soalan	Bidang Pembelajaran	Taburan Skor	Stimulus	Pembina Item
8	<b>Chapter 9 (Frm 4)</b> Endangered ecosystem	(a) KB04 = 10 marks (b) Evaluation KB05 = 10 marks <b>Total = 20 marks</b>	Diagram/ Schematic diagram/ flow chart / statement	SUSANTI
9	<b>Chapter 5 (Frm 5)</b> Inheritance + Variation	(a) KB04 = 10 markah (b) KB05 = 10 marks <b>Jumlah = 20 marks</b>	Diagram/ Schematic diagram/ flow chart / statement	TAN