

2010 HIGHER SCHOOL CERTIFICATE EXAMINATION  
**Biology**

**Section I (continued)**

**Part B – 55 marks**

**Attempt Questions 21–30**

**Allow about 1 hour and 40 minutes for this part**

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

**Question 21 (2 marks)**

Gregor Mendel and Thomas Morgan both used breeding experiments to deduce fundamental principles of genetics.

Complete the four blank boxes in the table.

2

	Mendel's Monohybrid Cross	Morgan's Fruit Fly Experiments																		
First Cross Parents Phenotype	tall × short	red eyed female × white eyed male																		
First Cross (F <sub>1</sub> ) Parents Genotype	TT × tt	X <sup>R</sup> X <sup>R</sup> × X <sup>r</sup> Y																		
First Cross Punnet Square	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>t</td> <td>t</td> </tr> <tr> <td>T</td> <td>Tt</td> <td>Tt</td> </tr> <tr> <td>T</td> <td>Tt</td> <td>Tt</td> </tr> </table>		t	t	T	Tt	Tt	T	Tt	Tt	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>X<sup>r</sup></td> <td>Y</td> </tr> <tr> <td>X<sup>R</sup></td> <td>X<sup>R</sup>X<sup>r</sup></td> <td>X<sup>R</sup>Y</td> </tr> <tr> <td>X<sup>R</sup></td> <td>X<sup>R</sup>X<sup>r</sup></td> <td>X<sup>R</sup>Y</td> </tr> </table>		X <sup>r</sup>	Y	X <sup>R</sup>	X <sup>R</sup> X <sup>r</sup>	X <sup>R</sup> Y	X <sup>R</sup>	X <sup>R</sup> X <sup>r</sup>	X <sup>R</sup> Y
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F <sub>1</sub> Phenotype	Tt	X <sup>R</sup> X <sup>r</sup>																		