



Independent Schools  
Examinations Board

**COMMON ENTRANCE EXAMINATION AT 13+**

**SCIENCE**

**BIOLOGY**

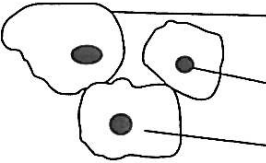
**MARK SCHEME**

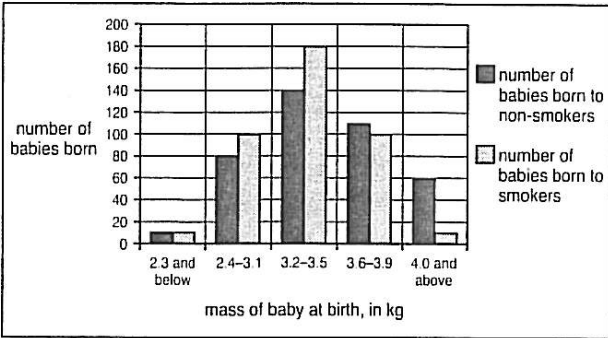
*This is a suggested, not a prescriptive, mark scheme.*

**Monday 7 June 2010**



283103M29

Q.	Answer	Mark	Additional Guidance
1. (a) (b) (c) (d) (e) (f) (g) (h) (i) (j)	nucleus fish carbon dioxide and water chlorophyll has fur primary consumers blood oviduct scurvy muscles	10	
2. (a)	 <p>X: cell membrane Y: nucleus Z: cytoplasm</p>	3	
(b)	peel off a small, thin layer of onion (using forceps) place the onion skin on (microscope) slide add a drop of water/stain (e.g. iodine) lower a cover slip onto the onion skin examine slide using microscope	3	any three ideas
(c)	cell wall/vacuole/chloroplast	1	accept starch grain
(d)	starch orange/brown blue/black	3	
3. (a)	A: placenta B: umbilical cord C: vagina D: uterus (wall)	4	

Q.	Answer	Mark	Additional Guidance																		
(b) (i)	it carries substances from the mother to the fetus	1	accept removes waste products  allow follow on error (i.e. correct function for incorrect label in first part of question)																		
(ii)	oxygen/glucose/water/nutrients/food	1	accept other appropriate answers																		
(c)	 <p>The bar chart displays the number of babies born in five mass ranges (in kg): 2.3 and below, 2.4-3.1, 3.2-3.5, 3.6-3.9, and 4.0 and above. For each range, two bars are shown: a dark grey bar for non-smokers and a light grey bar for smokers. The y-axis represents the number of babies born, ranging from 0 to 200 in increments of 20. The x-axis represents the mass of the baby at birth in kg.</p> <table border="1"> <caption>Data from Bar Chart</caption> <thead> <tr> <th>Mass of baby at birth (kg)</th> <th>Number of babies born to non-smokers</th> <th>Number of babies born to smokers</th> </tr> </thead> <tbody> <tr> <td>2.3 and below</td> <td>10</td> <td>10</td> </tr> <tr> <td>2.4-3.1</td> <td>80</td> <td>100</td> </tr> <tr> <td>3.2-3.5</td> <td>140</td> <td>180</td> </tr> <tr> <td>3.6-3.9</td> <td>110</td> <td>100</td> </tr> <tr> <td>4.0 and above</td> <td>60</td> <td>10</td> </tr> </tbody> </table>	Mass of baby at birth (kg)	Number of babies born to non-smokers	Number of babies born to smokers	2.3 and below	10	10	2.4-3.1	80	100	3.2-3.5	140	180	3.6-3.9	110	100	4.0 and above	60	10	3	3 marks for all bars drawn correctly  2 marks if one mistake  1 mark if two mistakes
Mass of baby at birth (kg)	Number of babies born to non-smokers	Number of babies born to smokers																			
2.3 and below	10	10																			
2.4-3.1	80	100																			
3.2-3.5	140	180																			
3.6-3.9	110	100																			
4.0 and above	60	10																			
(d)	170 non-smokers 110 smokers	2																			
(e)	decreases birth mass/slows growth	1																			
4. (a)	microscopic algae pond weed	2																			
(b)	photosynthesis	1																			
(c)	respiration	1																			
(d) (i)	it will decrease	1																			
(ii)	it will increase	1																			
(iii)	it will decrease	1																			
5. (a)	<table border="1"> <tbody> <tr> <td>quadrat</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>number of daisy plants</td> <td>4</td> <td>3</td> <td>2</td> <td>5</td> <td>6</td> <td>4</td> </tr> </tbody> </table>	quadrat	1	2	3	4	5	6	number of daisy plants	4	3	2	5	6	4	2	2 marks for five correct  1 mark for three correct  0 marks for two or fewer correct				
quadrat	1	2	3	4	5	6															
number of daisy plants	4	3	2	5	6	4															
(b)	$\frac{4 + 3 + 2 + 5 + 6 + 4}{6}$ $= 4$	2	1 mark for working, 1 mark for correct answer  allow both marks if error made in (a) but working and calculation correct																		

Q.	Answer	Mark	Additional Guidance
(c)	4 × 1,000 = 4,000 daisies	2	allow consequential error, from above
(d)	rainfall/water availability mineral content of soil light intensity/amount of shading temperature carbon dioxide concentration herbivores	3	any three suitable suggestions
6. (a)	has fur/hair/suckles young with milk/warm-blooded	1	any one of these
(b)	lays eggs/beak/bill/poisonous barb	1	any other suitable answers
(c)	webbed feet nostrils which can close tail for swimming thick fur	3	any three suitable suggestions
(d)	detecting/catching prey/finding mates/detecting predators	2	any two suitable suggestions
(e)	thick fur insulates slows heat loss fat store in tail used as energy store <i>or</i> to generate heat to keep warm	2	
(f)	<i>any suitable reptile</i> scales lay eggs on land vertebrates ectotherms/cold-blooded	3	any two suitable features
<b>Total</b>		<b>60</b>	