ASSUMPTION ENGLISH SCHOOL

Sec 1E EYE Science 2019

Marking Scheme

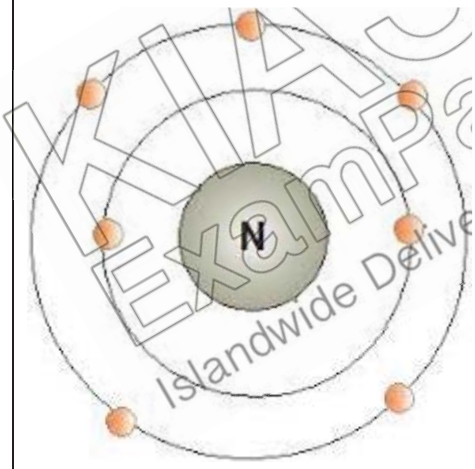
Section A

Answers

1	2	3	4	5	6	7	8	9	10
C	C	D	C	C	B	C	B	B	B
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
C	C	C	C	A	C	D	D	A	C
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
B	A	D	B	A	B	A	C	D	D

Section B

Qn	Solution	Marks	Remarks
1ai	Mass of ball	B1	
1aii	Time taken to reach ground	B1	
1aiii	Height it is dropped from/ material of the ball etc.	B1	Any relevant answer
1b	Mass of ball does not affect how fast it falls from a height.	B1	
1c	<table><tr><th>Equipment</th><th>Measured Variable</th></tr><tr><td>electronic balance</td><td>mass</td></tr><tr><td>Stopwatch</td><td>time</td></tr></table>	B2	Accept Measure height dropped using a metre rule.

<table>
<tr><td>2a</td><td>
<table>
<tr><th>atom</th><th>P</th><th>Q</th><th>R</th><th>S</th><th>T</th><th>U</th></tr>
<tr><td>atomic number</td><td>1</td><td>3</td><td>7</td><td>9</td><td>13</td><td>18</td></tr>
<tr><td>mass number</td><td>1</td><td>7</td><td>15</td><td>19</td><td>27</td><td>40</td></tr>
<tr><td>No. of electrons</td><td>1</td><td>3</td><td>7</td><td>9</td><td>13</td><td>18</td></tr>
<tr><td>No. of neutrons</td><td>0</td><td>4</td><td>8</td><td>10</td><td>14</td><td>22</td></tr>
</table>
3 marks for all correct answers
2 marks for at least 4 correct answers
1 mark for at least 2 correct answers
</td></tr>
<tr><td>2bi</td><td>U</td><td>B1</td><td></td></tr>
<tr><td>2bii</td><td>T and Q</td><td>B1</td><td></td></tr>
<tr><td>2biii</td><td>S</td><td>B1</td><td></td></tr>
<tr><td>2biv</td><td>P</td><td>B1</td><td></td></tr>
<tr><td>2c</td><td>electrons</td><td>B1</td><td></td></tr>
<tr><td>2d</td><td> 
</td><td>B2</td><td>1 mark for 1st shell of valence electrons

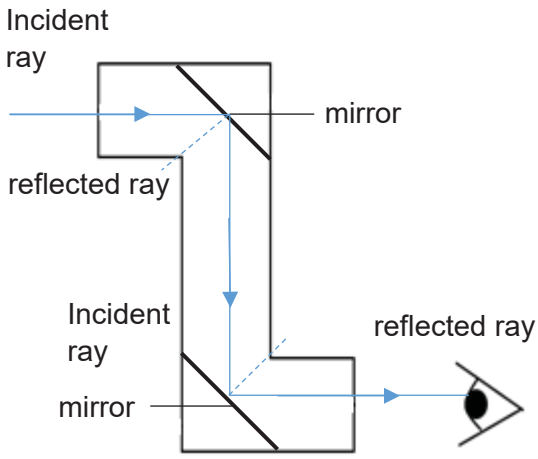
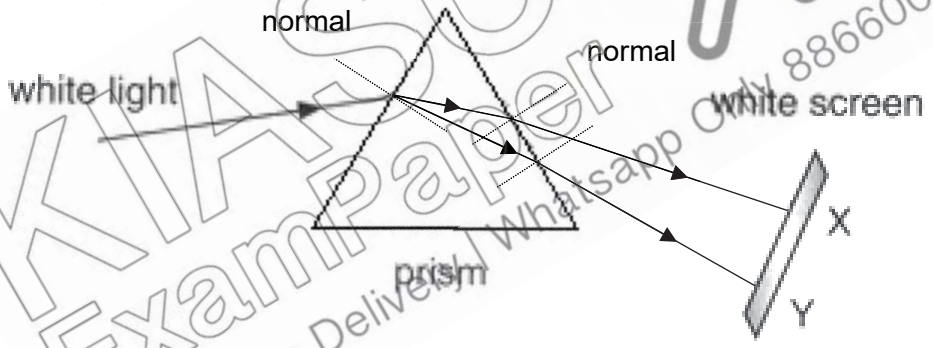
1 mark for second shell of valence electrons</td></tr>
<tr><td>3ai</td><td>The filter does not allow particles larger than the spaces in between stone and sand to pass through, leaving the impurities as residue and water as filtrate.</td><td>B2</td><td>1 mark for “does not allow particles larger than the spaces/ trapped”

1 mark for “residue…filtrate”</td></tr>
</table>

3aii	Use of extra layer of activated carbon	B1	Any other relevant answer pertaining to extra layers
3bi	Lesser dissolved salts passed through partially permeable membrane	B1	
3bii	To remove dissolved salts from water	B1	
3biii	The membrane acts as a filter. Dissolved salts and chemical molecules are small enough to pass through the tiny pores of the filter.	B2	1 mark for “small enough”, 1 mark for “tiny pores”.
4a	Distillation	B1	
4b	**X**: Condenser **Y**: Distillate	B2	1 mark each
4c	To allow the boiling process to occur more smoothly.	B1	
4d	The solvent is water because water boils at 100 degrees Celsius.	B2	1 mark for “water” 1 mark for “water boils at 100 degrees Celsius”
4e	A black solid would be formed in the round bottom flask because the sugar in Coca Cola decomposes with heating.	B2	1 mark for “black solid” 1 mark for “sugar decomposes..”
5a	A: cell wall B: nucleus C: vacuole D: cell membrane E: cytoplasm	B5	1 mark each
5bi	To allow selected particles to move in and out of the cell.	B1	
5bii	Semi-permeable	B1	
5c	Chromosomes	B1	
5d	The cell would lose its shape.	B1	

Section C

Qn	Solution	Marks	Remarks
1ai	B: Solid-liquid C: Liquid	B2	1 mark each
1aii	X: 801 Y: 1465	B2	1 mark each
1b	Particles of gases are arranged randomly at distances far apart, moving freely at high speeds	B2	1 mark for arrangement 1 mark for movement
1c	In region D, particles gain heat energy to overcome forces of attraction instead of raising the temperature.	B2	1 mark for "overcome forces of attraction" 1 mark for "instead of raising the temperature"
1di	Evaporation	B1	
1dii	Sodium chloride/ salt	B1	
2a	Sodium, hydrogen, carbon and oxygen	B2	2 mark for all correct elements 1 mark for at least 2 correct elements
2b	Water vapour: H_2O Carbon dioxide: CO_2	B2	1 mark each
2c	Number of types of elements: 2 Total number of atoms: 6	B2	
2d	$C_{18}H_{27}NO_3$. Not a hydrocarbon.	B2	1 mark each
2e	This is because capsaicin is insoluble in water. To relieve the burning sensation, use milk instead.	B2	1 mark each

3ai	45°	B1	
3aii		B2	1 mark for correct path of light with arrows 1 mark for normal and labels of incident and reflected rays
3aii	It would appear the same size because the mirrors used are plane mirrors.	B1	
3bi			
		B3	2 marks for correct path of rays 1 mark for labelled normal
3bii	Light decreases in speed.	B1	
3biii	X is red. Y is violet.	B2	1 mark each