

Q	Scheme	Marks	AOs	Pearson Progression Step and Progress Descriptor
<b>1a</b>	$EG + BC = 13 + 9 = 22$ *	<b>M1</b>	1.1b	5th Apply an algorithm to solve the route inspection problem
	$CG + BE = 15 + (13 + 7) = 35$	<b>A1</b>		
	$BG + CE = 7 + (9 + 8) = 24$	<b>A1</b>		
	Repeat $EG$ and $BC$	<b>B1</b>		
	Route. e.g. $BAGFEGCDEGBCB$	<b>M1</b>		
	Length = $89 + 22 = 111$ m	<b>A1</b>		
		<b>(6)</b>		
<b>1b</b>	Only need to repeat $CG$ with length 15 as this is $< 22$	<b>M1</b>	3.2a	5th Apply an algorithm to solve the route inspection problem
	Length = $89 + 15 = 104$ m saving 7 m	<b>A1</b> <b>A1</b>		
		<b>(3)</b>		
				<b>(9 marks)</b>
<b>Notes</b>				

Q	Scheme	Marks	AOs	Pearson Progression Step and Progress Descriptor												
2ai	<table border="1"> <tr> <td><b>Vertex</b></td> <td><i>A</i></td> <td><i>B</i></td> <td><i>C</i></td> <td><i>D</i></td> <td><i>E</i></td> </tr> <tr> <td><b>Valency</b></td> <td>2</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table> <p>Is traversable as only 2 odd vertices.</p>	<b>Vertex</b>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<b>Valency</b>	2	4	4	3	3	<b>B1</b>	1.2	4th Understand the importance of the order of vertices
	<b>Vertex</b>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>										
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2aii	<table border="1"> <tr> <td><b>Vertex</b></td> <td><i>F</i></td> <td><i>G</i></td> <td><i>H</i></td> <td><i>I</i></td> </tr> <tr> <td><b>Valency</b></td> <td>3</td> <td>5</td> <td>3</td> <td>3</td> </tr> </table> <p>Is not traversable as all odd vertices.</p>	<b>Vertex</b>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<b>Valency</b>	3	5	3	3	<b>B1</b>	1.2	4th Understand the importance of the order of vertices		
	<b>Vertex</b>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>											
<b>Valency</b>	3	5	3	3												
(1)																
2b	E.g. <i>EBDECABCD</i>	<b>B1</b>	1.1b	4th Determine whether a graph is traversable												
	(1)															
<b>(3 marks)</b>																
<b>Notes</b>																

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<b>3a</b>	Each arc contributes 2 to the sum of degrees, therefore this sum is even.	<b>B1</b>	1.2	4th Understand the importance of the order of vertices
	Therefore there must be an even number of vertices of odd degree.	<b>B1</b>		
		<b>(2)</b>		
<b>3b</b>	Identifies $G$ and $E$ as odd.	<b>B1</b>	3.1a	7th Solve route inspection problems in unfamiliar contexts
	If $x > 9 : 10\frac{1}{2}x - 26 = 100$	<b>M1</b> <b>A1</b>		
	$x = 12$ (If $x < 9$ , does not need to be considered.)	<b>A1</b>		
		<b>(4)</b>		
				<b>(6 marks)</b>
<b>Notes</b>				