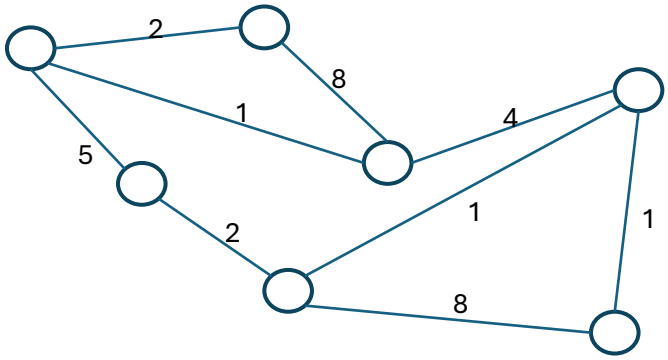
2.3.1 Dijkstra's Shortest Path Questions



1. The diagram above is of a weighted graph. Use Dijkstra's algorithm to find the shortest path from node A to G. You may use the table below to give your answer.

Node	Distance travelled	Previous node

Final path = _____

Distance travelled = _____

[6]

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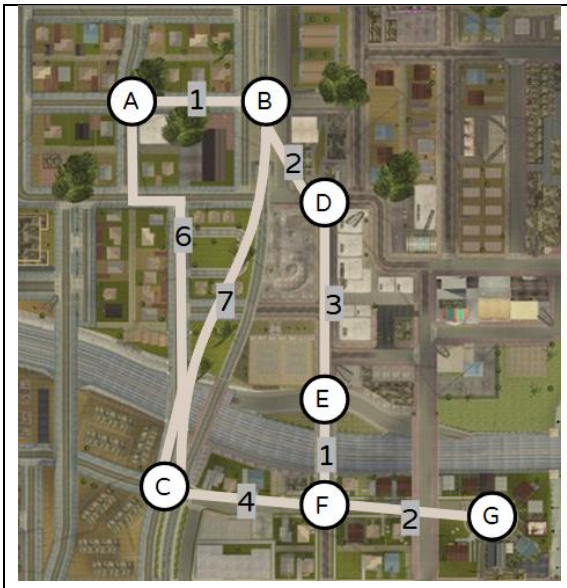

Node	Cost	Previous
A		
B		
C		
D		
E		
F		
Grove Street		

2. CJ is stuck in the wrong part of town. He needs to get back to Grove Street before he's discovered by the Vagos gang.
   Thanks to law enforcement, he has been dropped off at point A. He needs to get back home to point G. AKA Grove Street where the Ballas control the streets.

   Complete the table above and then fill out the shortest (final) path and distance travelled below. Big Smoke is waiting in the crib.

   Final path = _____

   Distance travelled = _____

END OF QUESTION PAPER

Mark scheme

<table>
<tr><th colspan="3">Question</th><th>Answer/Indicative content</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1</td><td></td><td></td><td>1 mark for final path A,D,G
1 mark for final distance of 14
1 mark for each section working shown.
<table>
<tr><th>Node</th><th>Distance travelled</th><th>Previous node</th><th>Marking Guidance</th></tr>
<tr><td>A</td><td>0</td><td>- / N/A / blank / None</td><td>1 Mark</td></tr>
<tr><td>B</td><td>5</td><td>A</td><td></td></tr>
<tr><td>C</td><td>2</td><td>A</td><td>1 Mark</td></tr>
<tr><td>D</td><td>10</td><td>A</td><td></td></tr>
<tr><td>E</td><td>7</td><td>B</td><td>1 Mark</td></tr>
<tr><td>F</td><td>15</td><td>E</td><td></td></tr>
<tr><td>G</td><td><s>19</s> 14</td><td><s>E</s> D</td><td>1 Mark</td></tr>
</table></td><td>6</td><td></td></tr>
<tr><td>2</td><td></td><td>I</td><td>
<table>
<tr><th>Node</th><th>Cost</th><th>Previous</th><th>Marking Guidance</th></tr>
<tr><td>A</td><td>0</td><td>-</td><td>1 Mark</td></tr>
<tr><td>B</td><td>1</td><td>A</td><td></td></tr>
<tr><td>C</td><td>6</td><td>A</td><td>1 Mark</td></tr>
<tr><td>D</td><td>3</td><td>B</td><td></td></tr>
<tr><td>E</td><td>6</td><td>D</td><td>1 Mark</td></tr>
<tr><td>F</td><td>7</td><td>E</td><td></td></tr>
<tr><td>Grove Street</td><td>9</td><td>F</td><td>1 Mark</td></tr>
</table>

1 mark for final path A-B-D-E-F-G
1 mark for final distance of 9
1 mark for each section working shown.
</td><td>6</td><td></td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>12</td><td></td></tr>
</table>