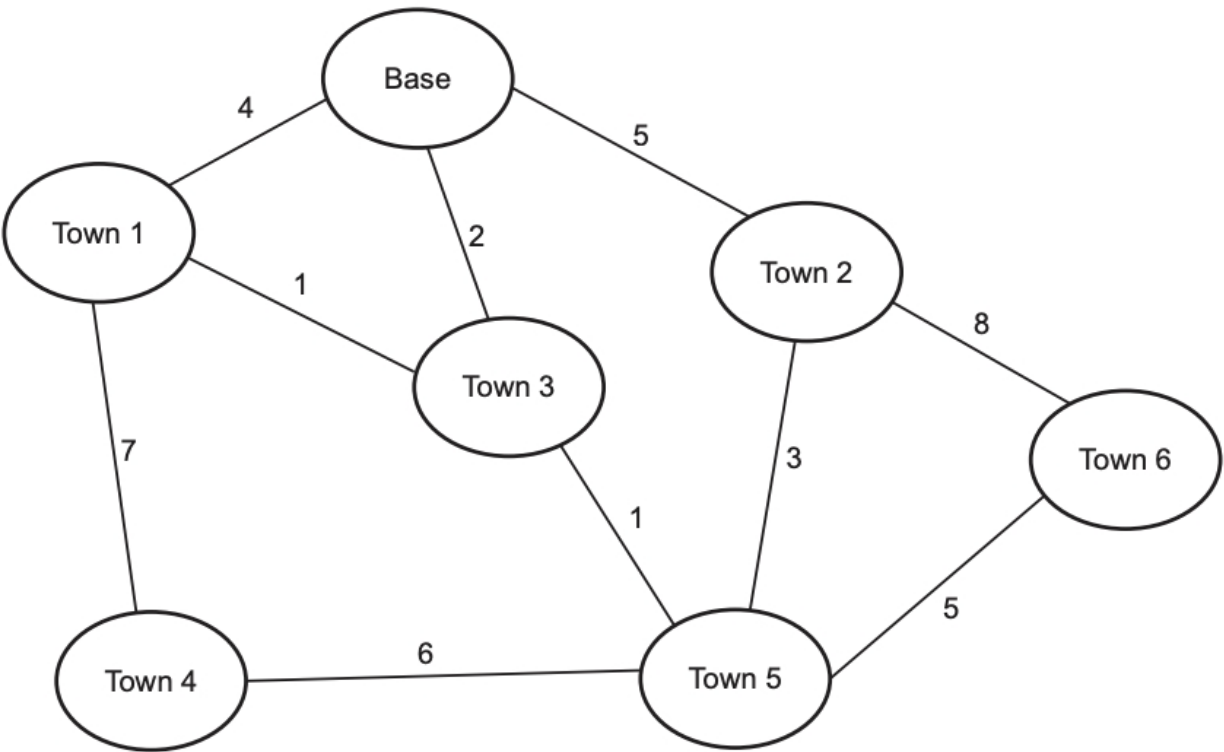**5** **(a)** Calculate the shortest distance between the base and each of the other towns in the diagram using Dijkstra's algorithm.

Show your working **and** write your answers in the table provided.

Working ....

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Answers

Town 1	Town 2	Town 3	Town 4	Town 5	Town 6

[5]

(b) Explain the use of graphs to aid Artificial Intelligence (AI).

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.... [3]

9 **(a)** The diagram shown represents an artificial neural network.

(i) State the reason for having multiple hidden layers in an artificial neural network.

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(ii) Explain how artificial neural networks enable machine learning.

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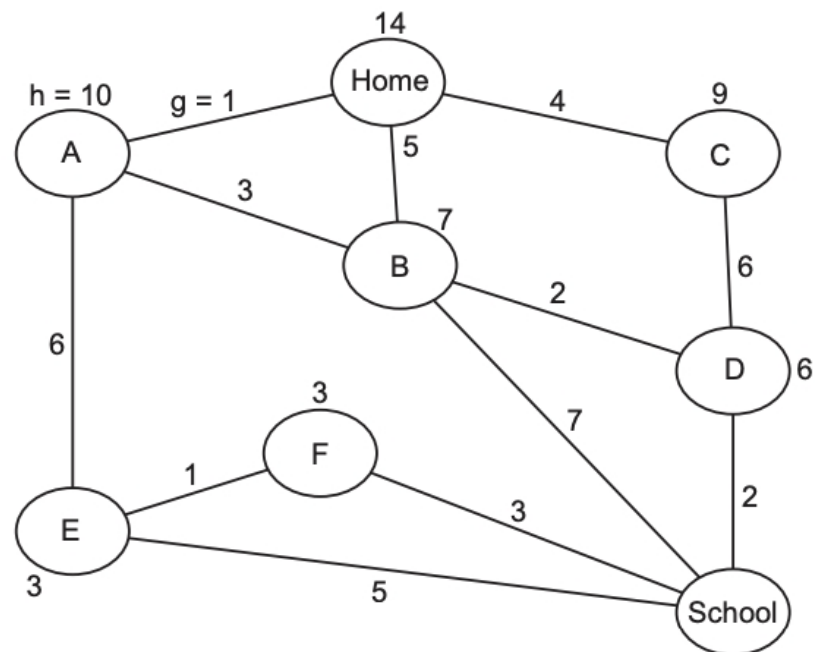... [4]

(b) Find the shortest path between the Home and School nodes using the A* algorithm. Show your working in the table provided.

The first two rows in the table have been completed.

Node	Cost from Home node (g)	Heuristic (h)	Total (f = g + h)
Home	0	14	14
A	1	10	11

Final path	

[5]

9 Deep learning is used in Artificial Intelligence (AI).

(a) Describe what is meant by **deep learning**.

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(b) Outline the reasons for using deep learning.

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