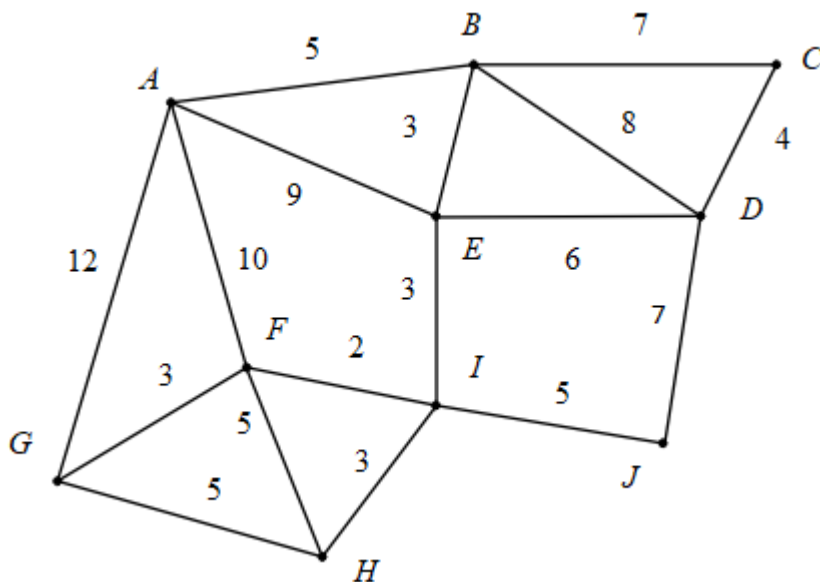


## Travelling Salesman - Exercises (Sol'ns) (2 pages; 14/8/19)

(1)(i) For the network below, use the lower bound algorithm to find a lower bound for a Hamiltonian cycle, by isolating A.



(ii) Use the nearest neighbour algorithm to find an upper bound for a Hamiltonian cycle, starting at A.

### Solution

(i) The two shortest arcs leading from A are AB and AE, with total length 14.

The minimum connector for the remaining nodes can be found as follows, using Prim's algorithm (for example), starting at B:

BE 3, EI 3, IF 2, FG 3, IH 3, IJ 5, ED 6, DC 4 ; total length 29

So the lower bound is  $14 + 29 = 43$ .

(ii) AB(5), BE(3), EI(3), IF(2), FG(3), HI(3), IJ(5), JD(7), DC(4),  
CB(7), BA(5)

Total length: 47