Problem 2

(a) ${}^{n}C_{2}$ = Ans

(b) $n!$ → n factorial Ans.

(c)

(i) <W-M-E-S> → cost is

W - M → 1.1

M - E → 1.4

E - S → 0.5

Total Cost → 3.0 = Ans

(ii) Neighbors of (WMES)

→ MWES → 2.2

→ EMWS → 3.2

→ SMEW → 2.9

→ WEMS → 2.9

→ WSEM → 2.6

→ WMSE → 2.5

= Ans.

(iii) Next state would be <MWES>, because it has least cost of all neighbors & we are using greedy hill climbing algorithm. Ans

(iv) Possible successors of <MWES> :-

→ WMES → 3.0

→ EWMS → 2.6

→ SWEM → 2.7

→ MEWS → 2.7

→ MSEW → 2

→ MWSE → 2.3

∴, we pick <MSEW> as the next state because it has lowest cost.

Possible successors of <MISEL>

→ SMIEL → 2.9
→ ESMIL → 2.5
→ LSEM → 2.6
→ MESL → 2.6
→ MLES → 2.2
→ MSLE → 2.2

∴, there are no states with a cost lower than the cost of <MISEL>. ∴, <MISEL> is the terminating state. Ans