Faculty of Engineering and Technology

Electrical and Computer Engineering Department

ENCS4130 – Computer Network Laboratory

Experiment No. 04

Dynamic Routing 2 – Link State Routing Protocols

Open Shortest Path First (OSPF)

4.5.1 Part One

1. Determine the shortest path from Router0 to all other routers using Dijkstra's algorithm. Show all steps clearly.

step	Selected	Visited	Dist(0)	Dist(1)	Dist(2)	Dist(3)	Dist(4)	Dist(5)	Dist(6)
0 (initial)	—	{}	0	∞	∞	∞	∞	∞	∞
1	0	{0}	0	2	∞	8	4	∞	∞
2	1	{0,1}	0	2	4	8	4	∞	∞
3	2	{0,1,2}	0	2	4	6	4	∞	104
4	4	{0,1,2,4}	0	2	4	6	4	12	104
5	3	{0,1,2,4,3}	0	2	4	6	4	12	8
6	6	{0,1,2,4,3,6}	0	2	4	6	4	12	8
7	5	{0,1,2,4,3,6,5} (complete)	0	2	4	6	4	12	8

- **0 → 0 : cost 0**
- **0 → 1 : cost 2 (path: 0 → 1)**
- **0 → 2 : cost 4 (path: 0 → 1 → 2)**
- **0 → 3 : cost 6 (path: 0 → 1 → 2 → 3)**
- **0 → 4 : cost 4 (path: 0 → 4)**
- **0 → 5 : cost 12 (path: 0 → 4 → 5)**
- **0 → 6 : cost 8 (path: 0 → 1 → 2 → 3 → 6)**

2. What is the cost of the shortest path from Router0 to Router6?

- **0 → 6 : cost 8 (path: 0 → 1 → 2 → 3 → 6)**