

**Q1.**

<b>Node</b>	<b>Neighbors (Cost)</b>	<b>Heuristic <math>h(n)</math></b>
A	B(3), C(5)	10
B	D(4), E(6)	8
C	F(5)	7
D	G(5)	4
E	G(3)	2
F	G(4)	3
G	Goal	0

1. Apply the A\* algorithm to find the shortest path from A to G.
2. Calculate and tabulate  $g(n)$ ,  $h(n)$ , and  $f(n)$  at every step.
3. Draw the search tree.
4. Write the final optimal path and total cost.

**Q2.**

<b>Location</b>	<b>Connected To (Cost)</b>	<b>Heuristic to Goal</b>
Main Gate	Admin(4), Library(6)	12
Admin	Lab(5)	9
Library	Lab(3), Hostel(7)	8
Lab	Canteen(4)	5
Hostel	Canteen(3)	6
Canteen	Goal	0

1. Apply A\* to find the shortest route from Main Gate to Canteen.

2. Show all  $f(n)$  calculations clearly.
3. Identify the optimal path and total travel cost.

**Q3.**

City	Connected Cities (Cost)	Heuristic to Destination
S	A(2), B(6)	12
A	C(4), D(7)	10
B	D(3)	8
C	E(5)	6
D	E(2)	5
E	T(4)	0
T	Goal	0

1. Use the A\* algorithm to find the shortest path from S to T.
2. Compute  $g$ ,  $h$ , and  $f$  values for each expanded node.
3. Show the final optimal route and total cost.

**Q4.**

Node	Connected To (Cost)	Heuristic $h(n)$
R	A(4), B(5)	11
A	C(6)	9
B	C(3), D(6)	8
C	E(4)	6
D	E(2)	5
E	G(3)	0
G	Goal	0

1. Apply the A\* search algorithm from R to G.
2. Draw the search tree with  $f(n)$  values.
3. Find the optimal delivery path and total cost.

**Q5.**

Location	Connected To (Cost)	Heuristic to Hospital
Home	X(3), Y(5)	10
X	Z(6)	8
Y	Z(2), W(7)	7
Z	Hospital(4)	0
W	Hospital(3)	4
Hospital	Goal	0

1. Apply A\* to find the minimum-time path from Home to Hospital.
2. Show all open list and closed list updates.
3. Write the final path and total travel cost.