1. aDiagram

   Description automatically generated
2. bDiagram

   Description automatically generated
3. a. Diagram

   Description automatically generated with medium confidence

2b Diagram

Description automatically generated

3.   
**\* = final states**

|  |  |  |
| --- | --- | --- |
|  | 0 | 1 |
| P | {q, s} | {q} |
| \*q,s | {r} | {p, q, r} |
| \*q | {r} | {q,r} |
| r | {s} | {p} |
| \*p,q,r | {q,r,s} | {p,q,r} |
| \*q,r | {r,s} | {p,q,r} |
| \*s | 0 | {p} |
| \*q,r,s | {r,s} | {p,q,r} |
| \*r,s | {s} | {p} |

4a.

|  |  |  |
| --- | --- | --- |
|  | 0 | 1 |
| P | {p,q} | {p} |
| p.q | {p,q,r,s} | {p,t} |
| \*p,q,r,s | {p,q,r,s} | {p,t} |
| \*p,t | {p,q} | {p} |

4b. L = {w | w has to include 0 and the second to last can’t be a 1}