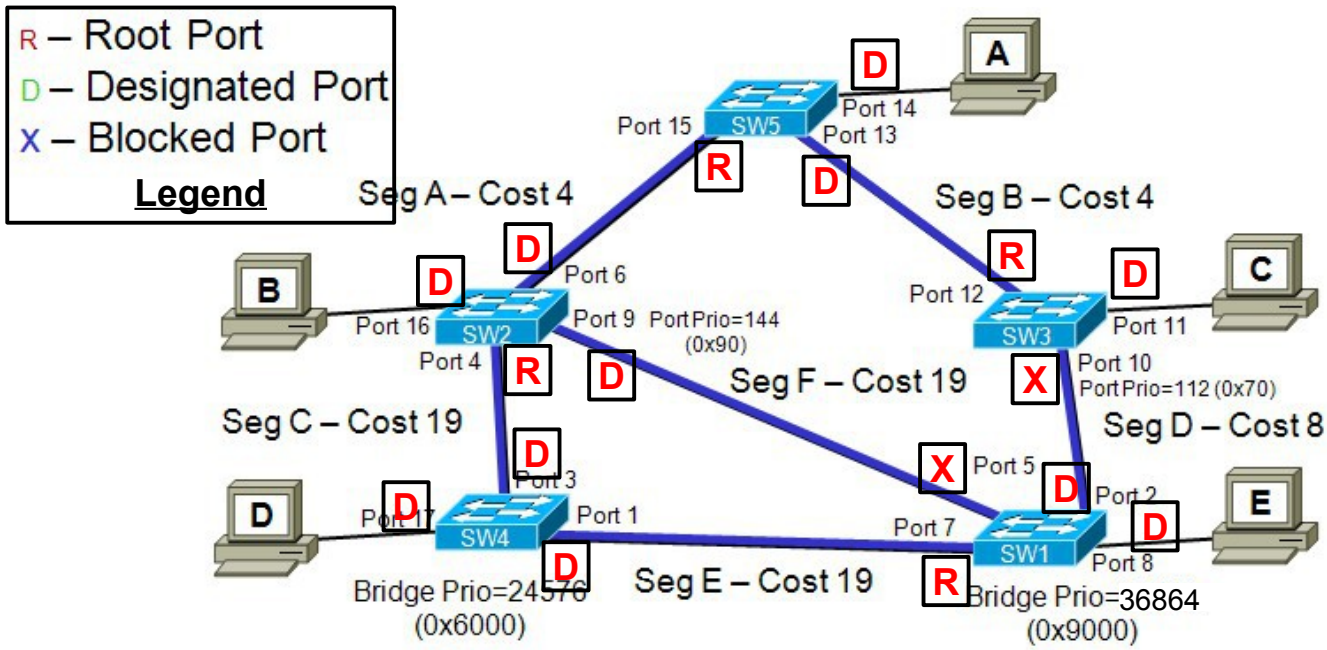
1. Study the diagram below carefully. Assume all values are **default** unless otherwise noted.



Assume the MAC ID of SW(n) is 00-nn-nn-nn-nn-nn and that all priorities are at their defaults, unless otherwise shown.

A. [1 mark] **Circle** the root bridge. **Switch 4 is the root bridge** (lowest bridge priority)
B. [5 marks] Label the diagram with the state of **all ports** after the network has converged.
SW1: R=7,D=2,8,X=5 SW2: R=4,D=6,9,16 SW3: R=12,D=11,X=10 SW4: D=all SW5: R=15, D=13,14

1. Root bridge: all ports shown above will be Designated.
2. All ports connected to hosts will be Designated (no other BPDUs)
3. Root ports for Sw1, 2, 5 are all based on Cost.
4. Segment F: equal cost, so choose Designated switch by sender BID:
   SW2 has better (lower) priority than SW1.
5. Other Designated Sw get chosen based on Cost: SW2-port 6, SW1-port 2, SW5-port13
6. SW3: cost is a tie, so choose Root port based on sender BID:
   SW5 has better (lower) priority than SW1. Port 10 blocks since SW1 is seg D designated.

– To elect the **root bridge**, the following criteria are used in order:
  - Bridge ID (= switch priority [1st]+ MAC address [2nd , tie breaker])

– To elect the **root port**, the following criteria are used in order:
  - Accumulated Cost to Root bridge (= received + cost of last link); lowest is best
  - Bridge ID (of sender; = switch priority [1st]+ MAC address [2nd])
  - Port ID (of sender; = port priority [1st] + port number [2nd])
  - Port ID (of local switch; = port priority + port number [tie breaker])

– To elect the **designated port** on a segment, the following criteria are used in order:
  - Accumulated cost to Root bridge; lowest is best
  - Bridge ID (of sender; = priority [1st]+ MAC address [2nd])
  - Port ID (of all segment; = port priority + port number [tie breaker])